Just Clusters

Economic development strategies that reach more people and places

REGIONAL
TECHNOLOGY
STRATEGIES, INC.

Just Clusters

Economic development strategies that reach more people and places

A Synthesis of Experiences

September 2002
Supported by a grant from the Ford Foundation

Stuart A. Rosenfeld

Regional Technology Strategies, Inc.
205 Lloyd Street
Carrboro, North Carolina 27510
919-933-6699
www.rtsinc.org

205 Lloyd Street, Suite 210
Carrboro, NC 27510

ISBN 1-931613-01-X

Cover art by David Suter ©

Table of Contents

The Asheville Statement

On December 2-4, 2001, 23 practitioners, researchers, and policy makers across the United States and from Europe met in Asheville, North Carolina to discuss the implications of cluster-based development strategies for (a) low and middle-income people, (b) economically distressed urban and rural places, and (c) small enterprises. Our purpose was to identify and devise policies and practices that are likely to expand opportunity and promote equity and that can be interwoven into the increasingly favored cluster-directed development strategies—to produce just clusters. The meeting was organized by Regional Technology Strategies, Inc. with support from the Ford Foundation.

Since clusters are a result of outcome-driven business decisions, any answers had to meet certain tests. Actions to improve opportunities for underemployed and undereducated people had to advance collective industry goals or self interests. Actions that support clusters in weak economies must demonstrate an innovative capacity that can ultimately make them self sustaining. Activities that addressed small businesses have to generate sufficient a scale to justify public investments.

We began with a common understanding of clusters on which to continue our discussions—the importance of geography and recognition of the porosity of boundaries, the relative values of different forms of external economies, the existence of cluster life cycles, and the distinctions between clusters and their policy precursor, networks. We also debated some of the tougher questions that come up in discussions of cluster-based development. For example, can clusters be planted in less advantaged regions? Are clusters a common or exceptional occurrence? Are cluster and sector employment strategies compatible? What does the growth of the knowledge economy mean for weaker regions and less educated populations? What happens when a cluster reaches the end of its life cycle?

Some of the key players in achieving more equitable outcomes of cluster-based development are community colleges, industry-versed but socially conscious intermediaries, cluster councils, and business service agencies.

Clusters, we agreed, could provide expanding opportunities for the lower economic strata but are by no means a panacea. There are serious obstacles including but not limited to inadequate skills and work experience, exclusion from the social networks that employers use to find workers and firms use to learn about innovations, distances and parochialism that isolate people and places

from market opportunities, and lack of access to capital.

Despite the barriers, we identified a number of possible actions to shift outcomes toward people, places, and firms that had been left behind in the last decade's economic growth. Some of the key players in achieving more equitable outcomes of cluster-based development are community colleges, industry-versed but socially conscious intermediaries, cluster councils, and business service agencies. Support structures are needed to ensure that people have the qualifications to compete for jobs, the contextual knowledge to be productive, and the career paths to encourage further education; that firms are able to network, to innovate, to pursue entrepreneurial ambitions, and are socially responsible; and that places are connected, innovative, and organized. Thus while clusters do not automatically extend advantages to less advantaged people, places, and firms, they can be effectively used to forge pathways that lead to higher incomes and stronger economies for those with the greatest needs.

Participants

Alen Amirkhanian, Massachusetts
Sergio Arzeni, France
Chris Benner, Pennsylvania
Greg Bischak, Washington, DC
Jim Clinton, North Carolina
Joe Cortright, Oregon
Wayne Fawbush, Vermont
Cornelia Flora, Iowa
John Foster-Bey, Washington, DC
Edward W. Hill, Ohio
William Kaufmann, Connecticut
Mikel Landabaso, Belgium
Neil Mayer, California
Eric Parker, Wisconsin
Phil Psilos, Washington, DC

Ford Foundation

Frank DeGiovanni
Miguel Garcia
Jackie Loh

RTS

Sarah Butzen
Jonathan Morgan
Stuart Rosenfeld
Sue Soltis
Trent Williams

Acknowledgements

This report represents the results of two intense days of discussions and debates among researchers, practitioners, and administrators (Appendix A) who have been deeply involved in various aspects of cluster-based economic development in international, national, regional, and local arenas. A few papers were prepared in advance to help stimulate the roundtable discussions (Appendix B). The final report, however, draws on participants' particular experiences and expertise to arrive at a collective understanding of the issues and a set of potentially effective actions. It is important to note, however, that all aspects of the report do not represent the views and opinions of all participants. There was considerable debate on a number of controversial issues.

Each person contributed to the ideas represented in the document and offered helpful suggestions and comments on various drafts. We are particularly grateful to Amy Glasmeier, Ned Hill, Cornelia Flora, Bill Kaufmann, Ed Bergman, Ifor Ffowcs Williams, and Meenu Tewari for their detailed comments and edits.

The project was carried out with the support of the Ford Foundation and the active participation and contributions of Director of Economic Development Frank DeGiovanni and Program Officers Jackie Loh and Miguel Garcia. Sue Soltis, RTS's administrative director, helped with the logistics in organizing the meeting and edited drafts of the report. Former RTS employee Dan Broun also reviewed and commented on the final report's organization and clarity.

The cover art is by internationally recognized illustrator David Suter, and the document design is by Maxine Mills.

Stuart Rosenfeld
Regional Technology Strategies
Project Director

I. Introduction

Strategies for developing a region's economy used to be relatively straightforward: build the infrastructure and maybe invest in "spec" facilities, train workers, assemble some financial incentives, and keep business costs as low as possible. But priorities have changed. Businesses that are successful in today's economy have more sophisticated needs. They want access to the knowledge and skills, more apt to be found where suppliers, customers, competitors, educational institutions, research labs, and labor are concentrated. Hewlitt-Packard's CEO told a national conference for governors to "keep your tax incentives and highway interchanges; we will go where the highly skilled people are."[1]

The current term for systemic concentrations of enterprises with common or complementary business interests is an "industry cluster." A cluster consists of groups of companies and/or services and all of the public and private entities on which they in some way depend, including suppliers, consultants, bankers, lawyers, education and training providers, business and professional associations, and government agencies. Clusters have become, in many parts of the world, the new mantra for economic development.

Are clusters equitable and just tools for economic development or do they skew resources to those already better off?

While many organizations have researched and applied clusters as tools for economic development, few have paid attention to who benefits, who doesn't, and why. Are clusters equitable and just tools for economic development or do they skew resources to those already better off?

The questions confronting the participants in the symposium in Asheville, North Carolina were (1) do clusters reach and serve the interests of low and middle-income populations, weaker economies, and small firms and (2) if not, can strategies be devised by government agencies and private foundations to extend the advantages of industry clusters to these target groups without compromising, and with ultimately increasing, the cluster's competitiveness?

Clusters by their nature are demand driven, with companies acting in their own best interests. Many rural and older urban areas—which generally have lower levels of education and income—are thus caught between a rock and a hard place. They can match neither the still-lower incomes of offshore regions to compete for labor-intensive clusters nor the amenities and talent of America's high tech and cultural centers to attract knowledge intensive clusters.

Any policies aimed at reducing dispari-

ties among regions or people also must advance companies' profit goals. On the other hand, the governments and non-governmental entities that support clusters as development strategies do have social and civic responsibilities to see that their investments ultimately have a reasonable chance to reach all segments of the population and all regions. How has this played out in the real world of economic development?

The consensus of those assembled in December 2001 was that regardless of how clusters grow and develop, whether as a result of local entrepreneurs taking advantage of market opportunities or through support and encouragement from public investments and policies, most impacts on equity have been incidental, not intended. A scan of state, regional, and metropolitan cluster analyses and studies conducted in industrialized nations found very few references to distributional outcomes with respect to people and places. The exceptions are federal and state programs that have adopted clusters and target less prosperous and rural regions or in places where the government must be inclusive to obtain the broad political support necessary for implementation.

If clusters themselves do not have explicit equity goals, can public policies aimed at achieving economic equity be more effective if molded to fit into current cluster strategies? Most of the benefits to low and middle-income populations, less advantaged areas, and small enterprises in fact have been due to the diligence of non-profits and social service agencies working to create economic opportunities for specific sub-populations or to government programs targeting places or companies based on need. In 1995, a report to the Ford and Mott Foundations on the use of sector-based development to overcome poverty confirmed our finding, noting that "in the development and implementation of cluster strategies… issues of public interest, such as determination of who gets the jobs being created, are rarely explicitly addressed."[2]

Our report examines the potential of cluster-based economic development strategies to reach people and places that have been on the fringes. It suggests ways to infuse cluster efforts with the means to extend the benefits of these policies to places and firms that have been marginalized in the race to the "new economy" and, by more effectively and extensively developing and using their skills and creativity, to people that have been underutilized and underemployed.

Most of the benefits to low and middle-income populations, less advantaged areas, and small enterprises in fact have been due to the diligence of non-profits and social service agencies working to create economic opportunities.

II. Nailing Down the Definition

The more accepted clusters become within economic development circles industry, the fuzzier their boundaries and composition. Paradoxically, the more the term "cluster" is used to define an industrial concentration and to determine practice, the more participating organizations clamor for clear definitions. The official title of "cluster" has political or policy significance to the extent that it draws special attention from funding agencies, establishes a reputation or accepted trademark in the marketplace, and attracts specialized resources. Participants were concerned that the utility of clusters will be diminished if the language becomes further degraded. Such degradation has occurred in some places where officials strived to place every company in some cluster to avoid any hint of favoritism.

In its narrowest sense, the label of cluster is conferred on groups of geographically bound business sectors that pass some litmus test of quantitative comparative criteria. In its broadest sense, a cluster is defined by systemic relationships among firms and organizations in a general region based on common needs for nearby goods and knowledge. Using this definition, most regions will have certain concentrations of employers that draw on common resources or knowledge or make similar classes of products and, to some degree, operate as a system. And, as systems, many companies are part of more than one cluster —as part of a supply chain of one, as a competitor in another, and, as a user (i.e., large information technology unit) in yet another. One elementary definition is that:

Participants were concerned that the utility of clusters will be diminished if the language becomes further degraded.

a "cluster" is a spatially limited critical mass (that is, sufficient to attract specialized services, resources, and suppliers) of companies that have some type of systemic relationships to one another based on complementarities or similarities.

What differentiates a group of private enterprises from a "cluster"?

Despite a spate of definitions and classification schemes from around the world organized according to, for instance, measures of competitiveness, technology, depth of relationships, and public purposes, the group reached consensus on the minimal requirements of a cluster. The first is a scale of demand among employers that produces external economies, i.e., a sufficient number of firms with common or overlapping needs to create or attract more services and resources (including labor) than would be available to more isolated firms—and often at a lower cost.

The second is the depth of the relationships among members within the region. The dynamics of clusters are embodied in the value- and knowledge-adding chains among its members.

The most important external economy in all mature and most growth clusters is the mid-skilled labor force.[3] Companies depend on an uninterrupted flow of workers with the necessary skills and the knowledge of the industry to apply them to both routine and unanticipated situations. In this flow, the critical factor is not the highly educated employees, who can be and are recruited globally, but the mid-skilled technical labor force that is locally educated and less geographically mobile. Most of the mid-skilled labor force are educated at local community colleges, technical institutes, and vocational schools, and come predominantly from lower and middle class backgrounds.

Other external economies include specialized services, such as bankers and accountants with a depth of understanding of the industry's technologies and markets; suppliers and customers who share expertise; faculty and graduate students at universities; trusted consultants available to help solve specific problems; and business support centers that can assess production methods and business procedures and advise.

It is important to note that some external economies are driven purely by the size of the market created by the scale of business and job opportunities and not by trust-based relationships or organizational membership, commonly termed "social capital." Social capital can help companies make more informed decisions and perhaps find better services but does not create all external economies. Some are unintentional, such as the leakage of knowledge as "technologies spread to smaller companies not through formal market relationships but "through swapping of employees within a pool of common skilled and technical labor developed around the region's core technology."[4]

In clusters with social capital, knowledge and innovation is transferred much more readily.

But there are other important "soft" external economies that do depend on personal relationships and connections, such as the acquisition of tacit knowledge, which is buried in the minds of individuals and the routines of organizations and thus is not easily communicated except through personal interaction.[5] In clusters with social capital, knowledge and innovation is transferred much more readily. Clusters that have either organized themselves into some association or use existing associative venues to actively promote learning and networking thus expand their external economies. The new sock testing lab established by hosiery firms in the Catawba Valley of North Carolina gives companies access to advice and sophisticated equipment that no single one of them would have been able to obtain alone.

There is, in many parts of the world, an increasing focus on membership organizations to represent and demonstrate the existence of clusters. Neither "membership" in an organization nor cooperation, however, is required to be part of the cluster. While an existing association pro-

Is it a Network or a Cluster—and Does it Matter?

No report on clusters would be complete without acknowledging their grounding in the many governments and foundations that supported initiatives to form business networks beginning in the late 1980s. Business networks were first observed in northern Italy as the way very small enterprises could pool their strengths and resources and successfully compete against larger players. The focus on business networks in some ways put the cart before the horse, because those Italian networks were a result of social capital within highly concentrated clusters. Although the two terms—network and cluster—are sometimes used interchangeably, there are fundamental differences. Networks are closed organizations that generate external economies for members willing to share costs of resources, expertise, or information. Clusters derive external economies because the market delivers it to them as a result of the scale of demand. An open, cluster-based organization adds considerable value but is not essential.

vides many real benefits, "free riders" are nonetheless important members of the clusters. Simply by virtue of geography, they are able to realize all of the non-exclusive external economies that accrue to members of cluster associations.

Setting boundaries without building fences

The geographic boundaries of clusters are defined, in the loosest sense, by the distance and time that people are willing to travel for employment and that employees and owners of companies consider reasonable for meeting andnetworking. The geography over which know how can efficiently spread is influenced by transportation systems and traffic but also by cultural identity, personal preferences, and social hierarchies. In a city with heavy traffic congestion, the ostensible cluster limits might be a metropolitan area or even a neighborhood. The information technology/new media cluster called Silicon Alley in Manhattan, which is concentrated south of 41st Street, and Long Island's information technology cluster, though just across a bridge from each other, have such weak ties that they could be located in different countries. In some neighborhoods, social barriers created by class or race can restrict residents' connections and opportunities to an even smaller area. In rural areas where roads are relatively free of traffic and people are more accustomed to driving long distances, a cluster may exist across a region that stretches up to a hundred miles. The metalworking companies in western Minnesota and eastern North and South Dakota that are members of the Tri-State Manufacturers Association are willing to drive that far for planned events.

Geographic and industry boundaries play a big part in determining which kinds of systemic relationships among members are possible to develop and affect.

Geographic and industry boundaries play a big part in determining which kinds of systemic relationships among members are possible to develop and affect. National and generic clusters covering a geographic region that extends beyond commuting patterns or a collection of industries that needs dissimilar skills or technologies gain few of the advantages associated with specialized labor market pools, tacit learning, and a collective identity.

In many mature clusters, the advantages associated with proximity between suppliers and customers have allowed them to grow vertically. The just-in-time delivery requirements of final producers attracted suppliers and generated new market opportunities for qualified local companies. The new Nissan plant in Mississippi intends to produce five different models with only 30 minutes of inventory on the floor at any given moment, requiring many just-in-time suppliers.[6] In technologically advanced clusters, having suppliers' engineers near enough for joint design or problem solving is an advantage. But beyond the first tier, suppliers of complex or customized parts or subassemblies, the proximity advantage disappears quickly. With overnight deliveries possible from almost anywhere in the world, companies can and do put out their bid requests on the Internet and contract to anywhere a firm can meet their design and delivery requirements at the lowest cost. Many of the contracts filled by members of the National Machining and Tooling Association, for example, are now are let via Internet bidding auctions.

One of the first requirements that funding agencies place on clusters is a membership organization that bears some name related to the cluster, is able to speak on behalf of the cluster, and operates at some level as a network. Experience in Connecticut's cluster initiative, one of the early U.S. state-wide programs, showed that it generally takes a common and pressing problem and is enhanced by the opportunity to affect public sector programs and policies to successfully and repeatedly get companies around the table.

The life cycle of a cluster

Participants agreed that clusters, because they are associated with certain classes of products or services, have life cycles.[7] Sustainability is a term that applies to economies but not necessarily to specific clusters. The stage of development of a cluster affects the ways that opportunities and outcomes are distributed. Cluster stages can be in incubation (embryonic), takeoff (growth), maturity, or declining stages.

The incubating clusters are generally based on wellsprings of innovations or inventions but they can also be based on recruiting existing or expanding industry leaders. Many of the efforts to establish biotechnology clusters include support for research facilities,j15

while efforts to create semi-conductor clusters are more often based on recruitment incentives. But the embryonic stage of many successful clusters was unplanned and unanticipated. Some of the world's best known clusters came about as the result of entrepreneurial employees of one or two industry leaders becoming new niche competitors, suppliers, consultants, or using their ingenuity to develop a complementary product or service.

Once a cluster has a large and recognized market, it attracts imitators and competitors and generates entrepreneurs. At this point, it enters a takeoff stage. Global markets and demand for skilled labor are expanding but so too is the competition. Managers and skilled labor are quicker to change employers as they learn of new job opportunities or to develop their own market opportunities. New companies maintain close relationships with each other in order to stay on top of new developments in marketing, design, and technology, and they continue to innovate.

As production processes becomes more routine, more and more imitators will enter the market, and costs become a more important competitive advantage. At this point, the cluster has reached its mature stage and faces new competition from other places that can operate at much lower costs. Those clusters that do not advance technologically may begin to move to new locations. In this stage, the cluster must find ways to increase productivity—perhaps through labor saving investments— and look for new advantages in different niches and higher value added products or services such as incorporating a design or technology with advantages that outweigh costs.

Once a cluster has a large and recognized market, it attracts imitators and competitors and generates entrepreneurs.

When the cluster's product becomes fully replaceable by lower cost or more effective substitutes, it enters its declining phase. One of the advantages of organizations that represent clusters is their ability to act as an observatory for market changes and begin to look for new products or market opportunities based on core competencies long before this stage is reached. A few clusters, such as arts, handicrafts, or health care, are able to embody all phases, maturing without diminution of markets.

III. If not a Panacea, At Least an Opportunity

Nations, regions, and communities, while dependent on the success of their industries for the creation of wealth, also have civic responsibilities toward their citizens, such as maintaining a high quality of life, a healthy environment, and some minimum standard of living. Therefore, some balance between public good and business profitability is a necessary goal of public policy and of inherent interest to communities. Are policies that target industry clusters consistent with the social aims of the public sector? Is it reasonable or feasible to expect demand-driven policies to achieve supply side social justice ends?

Participants in the symposium agreed that the use of clusters as a focus for economic development strategies does not necessarily directly benefit low-income people, small employers, or distressed regions. Left to their own devices, clusters do not explicitly pursue social goals. Clusters that have organized in order to set priorities and define their own interests rarely place equity very high on their agendas. For the private sector to assume some social responsibility, there must be an economic payoff.

From a state or national perspective, clusters must ultimately increase rates of innovation, which in turn will raise productivity and generate new enterprises, thereby increasing the income pie so that everyone can get a larger slice. From a company's vantage point, efforts to improve equity must ultimately pay off in increased profits or stock value. From an individual's perspective, clusters have to improve employment, advancement, and income opportunities.

Working Harder to Find Workers

In both tight and weak labor markets, one payoff has been an ability to find and keep a qualified work force. When labor markets are tight, which happens even in bad economic times for older clusters and less attractive locations, it is increasingly difficult to find skilled workers. These clusters have had to look deeper into the labor pool for non-traditional workers they may have undervalued in the past. Furthermore, they realize that they may have to invest more in education and training to maintain their work forces at full capacity and to move toward a high performance work organization and increased productivity.[8]

For the private sector to assume some social responsibility, there must be an economic payoff.

Branded as Caring

Another kind of payoff is in using social responsibility to create brand loyalty. There is evidence that some corporations,

and particularly those locally owned, will operate differently where socially conscious actions create an image that commands customer loyalties that in turn produce sales or enhances their work force. Investments that support community amenities and increase the general quality of life help clusters attract mobile and discriminating talent. These all affect the bottom line. Good deeds can be converted into profits with the right marketing strategies and social responsibility "pays off" if consumers value it. For example, many people choose to buy Paul Newman's marinara sauce, rainforest candy bars, or products with union labels —even when they command premium prices.

Investments that support community amenities and increase the general quality of life help clusters attract mobile and discriminating talent.

In the real world people do not always act purely on pecuniary interests. If they did, large numbers of consumers would not make annual donations to charities or choose to make investments in socially responsible mutual funds.

Caring about Communities

Some participants cited examples of communities where managers and owners care enough about their relationships to their community and about the opinions their peers and friends hold of their business actions to act in socially responsible ways. Further, private enterprises are more likely to act in the public interest where they operate in the collective social environment that clusters aspire to build. In Connecticut, for example, an inner city economic development strategy is being implemented under the umbrella of the state's cluster program and with support of business leaders on the cluster councils. In the Northeast Kingdom of Vermont, where community and business interests are closely intertwined, owners of local businesses are willing to make trade offs between maximizing the quality of their lives and maximizing income. A "cultural gene" that supports social responsibility, cooperation, and fairness has been found to exist across almost every society.[9] A 1992 study cited numerous examples of CEO-level civic organizations formed to address urban social problems.[10]

There will always be some difficult equity issues that are not easily converted into profits and are not popular causes among employers. In these instances, can the focus on instilling equity concerns into clusters be turned on its head to frame equity programs around clusters? Despite barriers to more socially responsible distributional outcomes of clusters, there have been a number of successful efforts to improve opportunities among people, places, and firms—some of which have taken advantage of clusters or of their attributes. The sectoral employment strategies for low-income and underemployed workers that have been operating over the past decade, some of which will be mentioned in the succeeding sections, have taken advantage of clustering and networking to achieve scale and develop specialization that match local industry concentrations.

IV. Tackling the Tough Questions

Throughout the deliberations of ways social objectives might be built into cluster strategies, a number of questions cropped up repeatedly that made us stop and take stock of the growing global enthusiasm for clusters. Are clusters the exception or the rule? Are they compatible with sector strategies? Does distance still matter in the age of the Internet and overnight deliveries? Can clusters be planted or transplanted? How will a knowledge economy affect disparities? Are clusters only good time or also hard time strategies? Can decaying clusters be rejuvenated?

Are clusters an exception or a rule?

After an analysis of the industry data and a close observation of the businesses in a given region, there may not be any sets of related industries with either the scale or concentration to operate as a cluster. If true, activists' programs would have to be generic or else customized to individual employers. Few places in the U.S. have the high concentrations of producers found in Italy's famed industrial districts. But in most places one can find systemic arrangements of firms (but rarely through the conventional quantitative cluster analyses) that act in some ways like a cluster and provide economies for scale and opportunities for networking. In such places, the underlying value of aggregating and articulating demand for public services and investments can yield more benefits than simply working with individual employers.

To find the clusters, it may be necessary to expand the included area to surrounding neighborhoods or counties, to look for umbilical cords to clusters in adjacent areas, to look for less obvious commonalities and more generic needs, or to focus on micro-clusters that lack scale but represent unique local competencies. The Initiative for a Competitive Inner City (ICIC) looks well beyond the boundaries of the neighborhood in searching for cluster-based opportunities for large urban areas.

Re-orienting the central theme of the cluster from some commonality of production process to a commonality related to knowledge, innovation, or entrepreneurship, may also open up new possibilities for generating externalities and taking collective actions in a region. In Europe, the common cluster theme is innovation. In the European Union's

In most places one can find systemic arrangements of firms (but rarely through the conventional quantitative cluster analyses) that act in some ways like a cluster and provide economies for scale and opportunities for networking.

Regional Innovation Strategies program, research and development are partnered with a wide range of companies. Among less favored regions eligible for funding under this program (those with per capita income below 75 percent of the European average), some focus on specific clusters but others emphasize technology developments that can be used across a range of industries.

A meeting hosted by the Hubert Humphrey Institute at the University of Minnesota produced a definition for knowledge clusters in rural areas that lack the key ingredients of industry clusters. In these situations, the clustering refers to the aggregated local knowledge as driver of innovation and competitive advantage. In this framework, "rural knowledge clusters are specialized networks of innovative, interrelated firms centered outside of major metropolitan areas, deriving competitive advantages primarily through accumulated, embedded, and imported knowledge among local actors about highly specific technologies, processes, and/or markets."[11]

One of the most important distinguishing features of clusters is the ease of transfer of the tacit knowledge, or know-how, that is based on experience and judgment and is not codified.

Are the existing sector strategies compatible with cluster approaches?

Sector strategies, supported for more than a decade by foundations and some government agencies, are a precursor to cluster strategies. The distinctions between the two are not as great as the different nomenclature might suggest. Sectors that are defined by products and are limited by geographic boundaries—as most of the foundation-funded initiatives have been—can be alternatively defined as clusters. One only has to add the supply chains, specialized support services, social infrastructure, etc. that have not been included to turn "sector" into "cluster." The main difference is that clusters can be defined by commonalities only loosely related to sectors.

A large proportion of the sector employment programs of the 1990s overlapped cluster strategies, and some sector strategies were indeed synonymous to cluster strategies. Those that focused on sets of industries and not just sets of occupations, that employed people with industry experience, and that offered a variety of related services could legitimately be termed cluster strategies. The Mountain Association for Community Economic Development (MACED) in Kentucky, which focused on the timber processing industries, the Jane Addams Resource Center in Chicago on metals, and the Needle Trades Action Project (NTAP) in Massachusetts on the apparel industry are (or were, in the case of NTAP), spatial sector-based initiatives.

Does closeness count or is distance dead?

Even as the world gets smaller and communication can occur "anywhere, anytime," not one of the participants believed that a telecommunications network will fully replace personal interactions. That's why one of the most

important distinguishing features of clusters is the ease of transfer of the tacit knowledge, or know-how, that is based on experience and judgment and is not codified.[12] Informal learning, acquiring know-how, and trust building require the face-to-face contact that occurs through social, professional or trade, and business situations. Even the members of the Internet-dependent New Media cluster in lower Manhattan[13] rely on their ability to meet informally and often, and maintain that greater distance would significantly reduce their competitiveness. Body language, inflections, and spontaneous responses affect the processes of learning and innovation.

The value of proximity does not reduce the necessity of maintaining external connections. While proximity accounts for much of the informal learning occurring within clusters, external connections are as vital for bringing new information into the cluster and for learning about sources of innovation from others. A continual influx of information into the cluster from research institutions, competitors, and customers around the world is intrinsic to keeping abreast of cutting edge ideas. Social capital—the institutions, relationships, and norms that shape the quality and quantity of interactions in a society—then transfers that knowledge from firm to firm and from individual to individual.

Can clusters be planted or transplanted in less advantaged regions?

The historical accounts of clusters suggest that they are rarely a result of a planned intervention. The world's largest clusters took a long time—usually many decades—to reach the critical mass that defined them as clusters. Yet most reflected a solid business logic. Perhaps no one would have predicted or planned for a carpet cluster in Dalton, Georgia. But

The historical accounts of clusters suggest that they are rarely a result of a planned intervention.

plastics in western Massachusetts had its basis in the competencies of the employees of a General Electric plastics (phenolics) plant and in the demand for parts from its local transformer and naval ordinance divisions. Metalworking along the Connecticut River Valley had its roots in government investments in the Springfield Armory. Food processing in Chicago can be traced to the city's multi-modal position in distribution and transportation for the Midwest agricultural sectors. The oil and gas cluster in southern Louisiana is tied to the natural resources in the Gulf of Mexico. Those regions in which clusters are linked to policy, such as Research Triangle, North Carolina and San Diego, were already well endowed with intellectual capital not typical of less advantaged regions.

Some clusters began as large companies that originally located in less populated areas for the low wages and surplus labor markets and that later disintegrated into smaller firms. This scenario describes the origin of furniture manufacturers in Tupelo, Mississippi and in County Monaghan, Ireland. The large hosiery cluster in the small town Castel Gofreddo, Italy developed after a foreign-owned plant shut down, and employees who grew up on farms bought the surplus equipment to start their own companies. Farmers in the

community invested their earnings to support this industry's growth.

Other clusters were created by transforming a common local craft into a related value-added cluster, such as straw hats into fashion knitwear in Carpi, Italy or bone combs to plastic combs to complex plastic parts in Leominster, Massachusetts. Still other clusters develop because other places don't want them. Prisons, for example, tend to cluster, as in the North Country of New York or the western reaches of Palm Beach County, Florida. The prisons buy local supplies, rely to some extent on local labor markets, and generate demand for training programs for staff and inmates. On the other side of the law, the illegal drug trade represents clusters that, *The Economist* notes, "brings rewards to some of the world's poorer countries and employs many of the rich world's minorities and unskilled."[14]

Adversity has proven to be a much stronger force for bonding and cooperation than prosperity.

Where the seeds of economic systems exist, as they do within many regional business "networks," it may be possible to leverage strengths into something larger and eventually to reach a scale capable of attracting or developing internally the specialized factors that comprise a cluster. Networks can eventually grow into clusters with a support structure and a core group of enterprising individuals.

What does the knowledge economy bode for who makes it and who doesn't?

The desire of states and regions to concentrate their resources on knowledge economy clusters such as information technologies or life sciences reduces employment opportunities for those areas where the population is less educated. Firms in potentially high growth clusters tend to concentrate in large urban centers or near research universities with plentiful amenities and a population of highly educated and talented people. Only cities and rural areas fortunate enough to have special physical assets or amenities attract the talent that supports nascent or high growth clusters. While these clusters create lower skilled jobs in the support sectors, rising housing and living costs make it hard for the lower income population to live nearby. It is also difficult to develop career ladders from support sectors to the higher paying occupations in the core cluster. Thus, the knowledge intensive "New Economy" has come to be associated with increased income disparities and limited career ladders.

Most of the research on clusters suggests that the more mature clusters, which have less growth potential and are under more competitive pressures, such as metalworking, plastics, and printing, offer the largest number of opportunities for low and mid-skilled people, less advantaged regions, and isolated enterprises. Even though work in mature clusters may be more routine and pay lower wages at the start, entry and advancement require less formal education and can be accelerated through short-term training. Firms that can find competitive market niches or

new ways to boost productivity can still compete and establish the base of a sustainable regional economy.

The group noted that while many states and regions give priority to knowledge-intensive clusters, the distinction has more to do with stage of growth and reliance on research than on the application of production technologies and skills. They would be ill-advised to assume that all emerging clusters use higher skills and more advanced technologies than traditional clusters. The latter also often need sophisticated technologies and technically skilled workers, and, in some emerging clusters, many of the jobs are routine and employ low-skilled people.

Do clusters work in both growing and declining economies?

While many current efforts to organize clusters are built on opportunities, it is important to remember that a large number of the most successful cluster-based developments in the last decade have been responses to an economic crisis or problem. Adversity has proven to be a much stronger force for bonding and cooperation than prosperity. New competition, market restructuring, technological change, and aging work forces have catalyzed collective action in many regions. The pressures of customer consolidation combined with competition from plants in low cost countries caused hosiery firms in North Carolina to cooperate on multiple fronts. Reductions in defense spending led electronics companies in Florida's panhandle to organize and recognize the value of collective action and collaboration. "Rebuild Los Angeles" was organized around key sectors in 1992 to revitalize the city in the wake of a series of riots. In the Northwest, the loss of timberland to protect the spotted owl led to the organization of the wood product industries.

When the economy heated up in the mid-1990s, it was the crisis of labor shortages that gave rise to many of the collaborative activities around which employers organized themselves. The tight labor market opened doors to previously excluded populations and gave clusters a common problem they could address collectively, even when it increased the risk of losing workers to competitors.

How does a region respond to cluster decay?

A prevalence in poorer areas of very mature clusters, sometimes called "petrified," can be a dark cloud hovering over economic development efforts. For decades the shoe industry dominated St. Louis and provided thousands of jobs for low- and semi-skilled workers. In the 1940s, as the saying went, St. Louis was "first in shoes, first in booze, and last in the American League." That industry is now almost non-existent except for some large distributors. Nationally, the industry that employed 235,000 in 1972 employs just 28,000 today. Similarly, Milwaukee was once the beer hub of the U.S., with most of the largest breweries. It failed to

The first lesson for areas dominated by mature clusters with declining sales is not to panic but to assess strengths.

If the cluster reaches a late maturation stage without planning or preparation, all agreed, it is probably too late to rejuvenate.

respond to the demand for variety; the rise of micro-breweries in places like Portland, Oregon has overtaken the area in beer production. But, fortunately, both St. Louis and Milwaukee had a sufficiently diverse industrial base and public and private leadership with enough foresight to survive, although both areas endured temporary hard times. St. Louis shifted more into aerospace industry and Milwaukee into its small engine and machine tool clusters, and both benefited from growth in their service economies.

Rural areas are harder pressed to replace declining mature clusters. After the court ruling protecting the spotted owl in the greater Northwest limited logging, mentioned earlier, the region tried to move into higher value-added wood product production. When employment in the textile industry in the the Appalachian region of South Carolina area dropped off due to automation and the industry relocating to lower-cost off shore areas, this metro area concentrated on the many German and Swiss machining builders it had attracted to build textile equipment. That region successfully turned the support industry into a competitive cluster that attracted other German and Swiss companies and, later, BMW.

The first lesson for areas dominated by mature clusters with declining sales is not to panic but to assess strengths, determine whether the downturn is temporary or structural, and, if the latter, look for alternative markets and products. The main ways to forestall and even reverse the effects of cluster decline are:

- rejuvenate the cluster with innovation (e.g., new designs, markets, products)
- take advantage of core competencies to transition into new products, or
- look for elements of the value chain that can be built into self-sustaining clusters.

Any region or cluster ought to be constantly thinking about all three possibilities. Most firms accept the need for continual innovation. But it is equally important for successful clusters to build contingencies for changes in consumer tastes and demand or for new technologies. The leaders of organizations that represent clusters must continually think about and plan for the future. If the cluster reaches a late maturation stage without planning or preparation, all agreed, it is probably too late to rejuvenate. The cluster, if well organized and self aware, should become a mechanism for gathering information, predicting shifts, and looking for new opportunities. North Carolina's first official state funds for clusters were for just this type of strategic planning, but only those clusters with organizations to represent and speak for their members were eligible for this support. How well a cluster responds to decline is a function of how quickly it is able to detect the shifts in the markets or technologies that threaten it and how well prepared it is to respond.

V. Insiders and Outsiders: Concerns about Equity

In *World Class*, Rosabeth Moss Kantor attributed regional economic success to three factors: concepts, competencies, and connections.[15] Participants reframed these in the language of the "new economy" to know what, know how, and know who. Without all three it is hard to get ahead today. Know what can be acquired with sufficient investment and support in education and training. But know how and know who are based on work experiences and personal connections, and therefore pose barriers that investment alone cannot easily surmount.

Social capital, a core asset of many clusters, has both its pluses and its minuses. Those people who lack the right connections are not referred to employers and fail to pick up scuttlebutt about potential job openings to even get in the queue. Those companies that are outside the networks that expose members to new processes and markets, non-public bid requests, and innovations miss out on many economic opportunities. Clusters create a capacity to network and learn, but the more they are defined—and correspondingly limited—by formal membership, and the more business activity depends on personal networking, the higher the hurdles for outsiders to obtain the benefits of that knowledge.

The outsiders: people who are left out

Our focus on the impacts of cluster strategies on low- and middle-income people covers a wide spectrum of issues, from finding employment for welfare recipients to helping people in the lower economic strata move onto and up career ladders and achieve middle class or higher economic status. Even the most successful industry clusters are of limited value to certain segments of the population. None of the Monitor Group's studies of the five innovation clusters, for instance, mentions employment opportunities for the less educated underemployed.[16] They may even harm some if actions result in gentrification, which makes neighborhoods of cities and towns more attractive to investors but also can make them less affordable to current residents. Some analyses of regions distinguish between "traded" and "local" clusters to extend the opportunity to more people. But too often the "local cluster" is dominated by low skill and low wage jobs with few career ladders, such as in the restaurant industry, which is now

Those people who lack the right connections are not referred to employers and fail to pick up scuttlebutt about potential jobopenings to even get in the queue.

America's largest employer, and the fast food industry, its largest sub-sector with 3.5 million workers.

The biggest challenge in serving lower income people is creating more efficient linkages between supply and demand in the labor market and between those individuals and organizations that look out for their interests and the businesses that provide jobs. The channels through which information about opportunities flow in clusters are constricted as social and business connections weaken. People in those communities or neighborhoods that are not home to the key producers, suppliers, or services are unlikely to know of job opportunities in the cluster, and, without guides and incentives, employers are unlikely to find their ways into these communities for training or recruitment. Most employers, especially small companies, rely on referrals and recommendations from people they trust rather than taking the time to sift through the massive information available through job banks. To be referred and recommended, a person has to be connected and known.[17]

Most employers, especially small companies, rely on referrals and recommendations from people they trust rather than taking the time to sift through the massive information available through job banks.

Without intermediaries that can relate to both firms in the clusters and communities to serve as guides and make connections, the community or neighborhood will derive little benefit from the cluster. A recent report from the Organization for Economic Cooperation and Development hypothesizes that "the increasing importance of individual learning within the knowledge based economy produces new forms of social inequalities, through the intensification of the disadvantages experienced by those denied access to learning opportunities."[18]

In "Photonic Valley," a name given the optical networking companies in northeastern Massachusetts, the poverty rate in 1998 was the highest since 1980. Older residents are most likely to be employed in low skilled jobs such as janitorial services for the high-tech industries in the surrounding area. Similarly, Silicon Valley firms still employ large numbers of low-wage and unskilled immigrants, often as contingent workers, to perform routine production tasks. The percentage of part-time, temporary, contract, and self-employed workers there has jumped from 19 percent in the 1980s to 42 percent in 2000.[19] While celebrated for giving the region its flexibility, the cluster contributes to growing wage disparities.

Palm Beach County's Business Development Board, which uses a cluster analysis as a framework for economic development, made no recommendations for improving economic opportunity for low-income county residents. Existing programs serving residents in the area were not linked to the clusters and therefore are unprepared to take advantage of opportunities afforded by tight labor markets.[20] The social divide, it seems, is a bigger obstacle to opportunity than the so-called digital divide.

The unchosen: places that are left behind

Some places have more highly developed clusters than others, and some places have more promising clusters than others. But certain places do not realize their potential due, for example, to insufficient specialization to achieve scale economies; fragmented public sector support; lack of knowledge or inability to take advantage of commonalities; or over-representation of mature clusters that are inclined to seek advantage through cut-throat competition or political pressure, instead of investment and collaboration.

The competitiveness of a region depends not just on its internal social capital but on its ability to learn from and import innovations ideas from further than the company down the road. An overview of the regions in the European Union classified as "less favored" characterizes them as having "sectoral specialization in traditional industries with little inclination for innovation and predominance of small family firms with weak links to external markets."[21] The most successful U.S. clusters include lead firms that are part of global networks and are exposed to global market opportunities, and that employ people active in international professional associations and networks. These firms regularly benchmark themselves against the best practices anywhere. Poorer regions and smaller companies have limited access to the benchmark practices, innovations, and markets. Without wider access, companies are limited to learning only within their regional borders and have a difficult time achieving any sort of competitive position.

Another characteristic of weaker economies is fragmented public services. The weak economies of less favored European regions, above, are compounded by fragmentation and minimal contact between research agencies and local firms. Ministries fail to communicate with each other and firms are confused by disconnected services. As a result, companies in these regions are inclined to look for their advantages in cost reductions, not investments and innovations. In weaker U.S. economies, similar fragmentation among state and local agencies exists, and companies underutilize what services are available.

The most successful U.S. clusters include lead firms that are part of global networks and are exposed to global market opportunities, and that employ people active in international professional associations and networks.

Cluster-based economic development in less advantaged regions is often used in one of three ways: (a) as a survival strategy for unemployed or underemployed people in a weak economy and protection from further decline; (b) as a sustainability strategy for furthering the development of a more advanced, generally low-tech, production or service cluster; or (c) as an entrepreneurial opportunity to create a new economy, often from scratch.[22] In most places, these strategies co-exist in the same clusters in hierarchical arrangements, with the lowest tier being the "survival" household firms and small workshops with limited resources and technology; the middle tier

Desperately Seeking Sectors

The Initiative for a Competitive Inner City (ICIC) operates under the assumption that poor inner city areas need more than low wages to attract investment, and that building workforce skills is a more effective strategy than giving unrestricted tax subsidies or addressing specific social issues. In 1998 Chicago's Urban League contracted with ICIC for a study of regional growth strategies to revitalize inner city and inner suburban communities. ICIC recommended a regional approach over a neighborhood-based strategy to take advantage of clustering. But that advantage depends on connections. The final report concludes with the comment that "linking sectoral strategies with technological development could expand employment opportunities for all groups, including inner-city and inner-suburban residents" but "inner-city communities generally have no intermediaries to represent their interests in sector strategy development."

the better endowed firms looking to hold on to comparative advantages; and the highest tier the technical innovators and exporters with fast growth aspirations.[23]

The two types of regions that have seen the fewest benefits from cluster policies have been neighborhoods of inner cities and poor peripheral and rural areas—but for quite different reasons. In both cases, the problem is in part a result of inadequate understanding of how companies structure the relationships that define their cluster boundaries.

If the analyses do not cast a wide enough net, they will miss real systemic relationships, and potentially fruitful rural specialties can slip by undetected.

Urban Neighborhoods Because large cities have more diverse economies than small cities, neighborhoods tend to intersect a variety of clusters. Neighborhoods lack the industrial space and resident talent to lay claim to a value added business cluster. While they could be home to some value added companies, they are more likely to be a source of employees who are willing and able to travel to work. Local employment opportunities are more apt to be in the retail and service sectors supporting the community.

Urban neighborhoods may be homogeneous ethnic enclaves that have considerable social capital unrelated to the larger economy. A study of social capital in low-income neighborhoods in Great Britain found that even though social capital existed, it was not linked to the power structures and therefore remained ineffective in expanding opportunity. Thus, the challenge for clusters is not to focus on strengthening a geographically restricted neighborhood economy but on improving the position and connections of the neighborhood, with its social infrastructure, to the cluster. The opportunity might be as close as the neighborhood next door. In Boston, inner city neighborhoods are very close to the city's financial districts and health care cluster, and an old industrial area of downtown Los Angeles neighborhoods is Toytown, the hub of over half the country's retail toy distribution—much of it owned and operated by immigrants.

Rural Regions Many rural regions fail to realize their connections and commonalities because they either use too narrow a definition of cluster membership or of cluster geography. The Council on Competitiveness, for example, uses as one indicator of clusters proportions of the U.S. national cluster employment and establishment totals, which are related to population and therefore overwhelmingly favor large metro areas. If the analyses do not cast a wide enough net, they will miss real systemic relationships, and potentially fruitful rural specialties can slip by undetected. A group of companies that draw on common natural resources or local workplace skills may be sufficient to achieve some types of economies of scale, and companies spread over a large area may be able and willing to meet and collaborate. When rural clusters do attract attention, it's typically agricultural or non-durable manufacturing sectors, which have low wage scales and limited growth potential.

When rural areas and neighborhoods can claim a cluster, the clusters are most often composed of mature industries that are not technology intensive. The characteristics of many rural and/or distressed regions—low levels of educational attainment, poor schools, little investment capital, weak connections to external markets and benchmark practices, and inadequate physical and support infrastructures—strongly favor those clusters that are in mature phases of production, the traditional industries based more on imitation than innovation. As such, these clusters are very susceptible to, and are in many places, losing ground to their competitors in less developed regions of the world. In underdeveloped regions, small family businesses that pass down skills from parent to child can produce a large number of similar products. Certain villages of Oaxaca, Mexico, for example, concentrate on textiles, carved animals, rugs, or pottery.

In low-income regions, the most common clusters have been in non-durable manufacturing—textiles, apparel, wood products, and food processing—and tourism. Boat building clusters in eastern North Carolina and central Kentucky, furniture in northern Mississippi and eastern Kentucky, apparel in eastern Tennessee, and hosiery in the Piedmont area of North Carolina and middle Alabama are all clusters that, despite increasing automation, are still labor intensive, have few positions that require post-secondary education, invest little in R&D, and rely more on imitation than on innovation. Furniture companies in northeastern Mississippi use each other's designs and attempt to produce them at lower cost and, when labor markets are tight, they are able to recruit competitors' employees for relatively small increases in wages. Houseboat builders in Kentucky are careful to protect their designs and work force from their local competitors.

It has taken the public sector a long time to realize and appreciate the unique challenges facing SMEs.

These imitation- and cost-driven clusters are much more susceptible to global competition than are innovation- and skill-driven clusters. For example, over the past decade employment in North Carolina's textile industry has dropped by

43 percent and in apparel by 63 percent. The unemployment rate in the Hickory, North Carolina metro area, home to the nation's largest furniture and hosiery clusters plus a large fiber optics cluster, rose from 1.8 percent to 9.4 percent between 2000 and 2002.[24] The members of the North Carolina clusters that have survived the competition and the recession are those that are agile, innovative, and have captured market niches.

The small players: firms outside the learning networks

Small and mid-sized enterprises (SMEs) are too often overlooked, both as parts of clusters that are dominated by the interests of large employers or as they comprise clusters vital to a locality but of insufficient scale or growth to meet the government's criteria. It has taken the public sector a long time to realize and appreciate the unique challenges facing SMEs. With the exception of new research and knowledge intensive companies, SMEs have been slow to learn about and adopt new technologies and techniques and enter new markets. To address this need, the federal government authorized in the Omnibus Trade and Competitiveness Act of 1988 a national manufacturing extension program.[25] But as budgets were cut and state programs forced to generate more fees for services, the programs shifted attention to the larger SMEs (small businesses are generously defined as companies with fewer than 500 employees) that can pay for services, leaving thousands of small employers without needed assistance.

On the positive side of the ledger, SMEs are more committed to place.

Those that pay low wages and give weak benefits are unable to compete for the most able people in the labor pools. Their managers, most of whom are native to the region and not college graduates, lack the connections that result from active participation in professional associations, travel opportunities, and a continual churning of employees. When the furniture companies in Oregon visited their counterparts in Sweden and the Carolina Hosiery Association took a group of owners to see their competitors in Italy and meet with the machine tool builders there, it was the first international experience for most participants.

On the positive side of the ledger, SMEs are more committed to place. They are less bureaucratic and more flexible, innovative, and entrepreneurial. Since SMEs are too small to have "departments," managers and workers alike are expected to know something about many different things.

Even further estranged from the support system and subsidies that are available to large firms are the micro-enterprises, the small entrepreneurial businesses that are mainly family run with perhaps a few part-time employees or apprentices. While an almost negligible source of national employment, on a selective basis they hold significant promise for many rural areas—especially the creative arts and tourism—that have experienced branch plant closings and have little chance at replacing those jobs. Micro-enterprises also tend to cluster but get precious little attention from policy makers.

VI. Obstacles to Fuller Participation in Cluster Strategies

Participants identified a host of factors (or lack thereof) that prevent some people, places, and firms from realizing the full potential of clusters. The biggest obstacle, at least according to employers, is the lack of people with basic skills, industry knowledge, and/or industriousness and work habits. That's why so many cluster-based development strategies begin with education and training. But beyond skills, there are other causes for the exclusion of certain populations, places, and firms. Poor people are disconnected from labor markets and job opportunities. Certain regions are isolated from product markets and sources of inspiration and innovation. In Europe, regional partnering, often oriented around common clusters, is a highly regarded development tool. Small firms are less aware than larger firms of the newest production methods and more apt to be at the mercy of a highly concentrated market.

Skills, skills, skills, and experience

Educational achievement (test scores) and educational attainment (years of school completed) are on average much lower in rural areas and among lower income populations. Further, "the workforce development system is generally regarded to be a poor source of a qualified workforce in most areas of the country….The perception is that workforce development agencies are not a source of skilled workers with positive work histories."[26] Employers point to the public education systems that serve low-income populations as a cause of poor skills. The rapid growth of the staffing service industry reflects the low regard in which the education system is held. The staffing service industry arguably has become the most important intermediary in the labor market for working families. But this industry, which provides labor at lower costs and less risk to employers, exacts a heavy toll from clusters and communities alike. The agencies typically charge employers 50 percent more than they pay their employees, 20 percent of an annual salary for direct placements, or a combination of both.

The work force looms even larger in the many clusters that now expect its labor force to have at least some postsecondary education.

The work force looms even larger in the many clusters that now expect their labor force to have at least some postsecondary education. Although estimates vary (80 percent is the figure used by the American Association of Community Colleges), most agree that in knowledge-based clusters, and increasingly in competitive mature clusters, the proportion is

Table 1. **Summary of Obstacles and Impediments to Full Participation in Clusters**

Obstacles and Impediments	For Low- and Middle Income People	For Less Advantaged Regions	For Firms
Skills, Skills, and Experience	Lack of prerequisites, chances to gain experience	Low skilled labor force, weak schools	Inadequate knowledge of benchmark practice
Social exclusion gated communities	Social impermeability	Cultural differences	Dues structure
Getting there from home	Travel time and cost, family responsibilities	Poor public transportation	Time constraints
Intermediaries that can't "talk the talk"	Place based and supply side focus	Functionally organized and generalists or bureaucrats	Lack of small business experience
Insularity and parochialism	Neighborhood or community bound	Little knowledge of external competitors	Isolated from peers, benchmarks
Chasing the New Economy	Unrealistic career expectations, miss high wage opportunities	Overlook real assets of place, better chances to compete	n/a
Branch plant domination	Pressures to cost cuts to suppliers and meet customer demands	Over-dependent on too few employers, forced to meet their demands	Controlled by large customer
Capital gap	Few family assets, weak credit history, unknown by investors	Distance from venture capital funds restricts monitoring	Focus on large firms, poor understanding of cluster

high. In 1998, nationally 57 percent of the work force had completed high school, and 39 percent had achieved an associate degree or higher.[27] The figures for minorities are significantly lower. In Silicon Valley, one recent study showed that about 84 percent of all jobs require two years of college yet only 57 percent of the Latino populations had graduated high school and only 23 percent had the qualifications necessary to enter college.[28] With formal educational requirements up and rising, those workers who lack credentials have a diminishing number of options. Moreover, companies, especially SMEs, prefer to hire people with industry experience who can be productive in the shortest period of time.

Without incentives or guides, companies overlook communities and neighborhoods where average skill levels are low and where educational programs are inadequately matched to employers' needs. Even in tight labor markets, firms will try to import workers before taking a chance on inexperienced and unfamiliar local workers, with the exception of the lowest skilled and paid positions. And for those low skilled jobs, many employers look to immigrants forced to accept poor working conditions and minimum wage. This disconnect becomes mutually rein-

forcing where, lacking opportunities to acquire experience and skills, the work force remains unqualified for good jobs. Workplace-based internship and training programs that allow employers to assess the capabilities of people they may have rejected are ways to break that cycle.

Social exclusion and gated communities

One danger in building social capital within clusters by forming membership bodies is that they begin to act as "gated communities." The converse of inclusiveness is exclusiveness, and, when that occurs, those that are not considered part of the "business community" are at a distinct disadvantage. Clusters associations form, as noted earlier, because companies want to interact not just electronically but on a personal level. Thus, the social organization of the cluster is a critical factor where firms share in privately held joint resources and knowledge, with some services and contacts provided by the organization. As Michael Enright notes "regional identity, at least its economic identity, is more and more dependent on the interaction and information flows among individuals, firms, and institutions, than on territorial details."[29] These flows depend largely on levels of associative behavior and on the existence and the strength of social infrastructure and/or the intermediary associations, which act as brokers or gateways. The resiliency of North Carolina's hosiery cluster has been mainly due to the strength of its local trade association and its ability to rally the companies around a common crises of global competition and of the effects of an increasingly consolidated customer base.

For the residents of the community, the issue is social permeability and the ease with which bridging relationships can form. Employment, promotions, and deal making are all highly dependent on interpersonal relationships and communications by word of mouth. This is why social capital is so highly valued in clusters. Since the release of Robert Putnam's work on civicness in Italy, social capital has become widely known to be the lubricant that facilitates systemic relationships within clusters. The Aspen Institute noted that sectoral initiatives are aimed at low-income populations that are defined "not simply by absence of resources but by the absence of marketplace relationships that can create opportunities of value to both participants and employers."[30] Cynthia Duncan found that in poor rural communities "lack of trust and cooperation in the community's social climate infects formal and informal relationships at all social levels... Nothing is based on merit, everything depends on whom you know and whom you owe." She argued that a "clearer understanding of social capital will facilitate efforts to ameliorate persistent poverty and underdevelopment…."[31]

Regional identity, at least its economic identity, is more and more dependent on the interaction and information flows among individuals, firms, and institutions, than on territorial details.

The bonding, or strong, links have been the easiest to build but potentially the most exclusive. Bridging, or weak, rela-

tionships that cross social, cultural, and geographic boundaries are more difficult to form and sustain but ultimately more useful because they expose participants to new knowledge, partners, employees, etc. Research on informal job searches shows that close friendships are less valuable than more casual acquaintances because the latter are much more likely to provide new contacts while close friends tend to share connections.

Getting there from home

Distance is a major deterrent to employment opportunities for many people in urban and rural areas. The best available jobs in a cluster, which are generally dispersed across a region, are more often than not located some distance from the homes and families of the people who can fill them. Value adding companies in high growth clusters are unlikely to be located in low-income urban neighborhoods, and will be quite far away in rural areas, which means considerable travel time for much of their potential work force. Most of the remaining production jobs in Yancey or Mitchell Counties, North Carolina are concentrated in the town of Marion in an adjacent county, about 25 miles of winding mountain roads from the population centers of the two counties, with no regular public transportation. That deters many potential employees.

Distance also inhibits learning among companies and regions. Small companies have few discretionary funds and little free time to travel to functions, visit benchmark companies, and they need to see an outcome when they do invest time and resources. Efforts to form networks or cluster associations have to produce real value. Similarly, poorer regions are cut off from places that might produce development opportunities and ideas. The U.S., in particular, has a parochial attitude towards the use of any public funds for travel even if it might results in better business practice or new markets.

Intermediaries that can't "talk the talk"

The formation of intermediary organizations has been a popular response to reducing the disconnects between regional cluster drivers and people, communities, and firms. Intermediaries created over the past three to four decades to implement poverty programs or address social issues are generally staffed by people with social service and community organizing, not industry, experience. They are unaccustomed to working with employers or clusters. As recent research showed (not surprisingly) employers and non-profits working with low-income populations and communities usually do not even speak the same language. Public sector intermediaries don't perform much better, suffering from the same language gap. Governments organize most of their services by function, not industry cluster, and therefore the officials employed may know the function very well—which might be financing, business startups, training, or marketing—but lack the industry context for its effective application.

There are exceptions, of course—particularly among labor-based intermediaries staffed by people from industry (although often with a history of adversarial relationships with management). The intermediaries often are neighborhood or community based, while clusters are re-

gional, which further obstructs stronger connections to clusters because their territories are different.

Research conducted on industry clusters in Palm Beach County, Florida found the paucity of workforce intermediaries to be a major impediment to low-income people benefiting from cluster-based strategies.[32] The intermediaries that were active focused on social services and community organizing and lacked knowledge of or credibility with employers. Exceptions, such as the Jane Addams Resource Center in Chicago and the Garment Industry Development Corporation in New York demonstrate the potential value of intermediaries that are closely connected to employers and have a high level of industry experience and credibility. But such intermediaries, according to recent studies, have a small out-reach scale and require long-term support.

Insularity and parochialism

Poorer regions, smaller companies, and lower income populations are often insular and parochial. They have limited and insufficient access to benchmark practices, innovations, markets, and jobs. While social capital is the medium that transports information and accelerates imitation inside a cluster, competitiveness is highly dependent on new information and ideas outside the cluster. The most successful clusters have lead firms that are part of global networks and markets and that employ people who are active in international professional associations and build personal networks. These firms regularly benchmark themselves against the best practices anywhere. Because their knowledge comes from a diverse set of sources, the wider the managers cast the net, the more likely a prize will be caught.

One cause of insularity and parochialism is limited knowledge of learning opportunities and lack of authority and/or resources to travel. Employers and employees rarely attend conventions and conferences where networking occurs and do not come across many visitors who may have experience in their lines of work and know of new or different ideas. A second cause is distrust in communities of outsiders. Some places are closed, or even inhospitable, to new ideas or outsiders. Without access and receptiveness, companies are limited to learning within their regional borders and have a difficult time achieving a competitive position. Richard Florida argues that tolerance (implying trust of outsiders), measured by an index of diversity, is as important to economic growth as talent and technology.[33] The Internet can overcome some of the isolation, but socially constructed digital divides limit even that, and the Internet does not replace the need for direct experience and broader personal relationships.

Without access and receptiveness, companies are limited to learning within their regional borders and have a difficult time achieving a competitive position.

Chasing the new economy

A current popular view of urban economic development is that the future of the large metropolitan area and their core

cities depends on building a "New Economy" as defined by research and knowledge dependent companies in the incubator or take off stages of growth. Its clusters include industries such as life sciences, information technology, and gaming.[34] Various studies have expressed concern that these shifts are increasing economic inequality and relegating less educated people to the lower income jobs in the service sectors that support the lifestyles of the more highly paid work force, for example, shops, restaurants, and personal services.

New economy clusters appear to have fewer career paths for those with low levels of education. Even in the computer hardware clusters, not all jobs are high wage or skilled. Many of the printed circuit board and semi-conductor manufacturers hire large numbers of immigrant and unskilled workers at wages not far above the legal minimum. The better new high technology service sectors are likely to require formal credentials along with accompanying certifications, whereas in mature manufacturing one can acquire marketable skills informally on the job. But the real danger for regions that take this lemming-like path to the "New Economy" is that they will overlook the strongest assets of mature clusters and miss potential market opportunities embodied in new markets or products.

Branch plant domination and market consolidation

The presence or absence of large multinational companies is an important distinction among clusters, affecting opportunities for SMEs and the sustainability of rural areas. Branch plants control the fate of vertically integrated clusters, both by pushing cost reductions and stricter product requirements down the supply chain and by reabsorbing more key functions internally. They also get most of the public sector subsidies, such as tax credits for work force training. Even in northern Italy, not all small companies derive the full benefit of clusters—especially when they are subsidiary to a large multi-national corporation, as through the Italian "putting out system." The lower tier suppliers of Benetton, for example, are small and non-unionized, employ mainly young women at low wages, and invest little in their training.[35] In the U.S., due to the pressures of large processors "about half of the nation's chicken growers leave the business after just three years, either selling out or losing everything."[36]

Another consequence of being over dependent on branch plants—more widely documented—is their proclivity to pick up and move to reduce costs, wiping out the core of the cluster. The loss of so many traditional manufacturing jobs over the past few years, which provided employment for many undereducated workers in the rural South, has mainly been a result of multi-national companies moving off shore. Clusters that are undercut by major closures must either capitalize on their skills to form new companies or reinvent themselves to survive. Even multi-nationals drawn to the clusters are not necessarily held by them. Of five multi-nationals attracted to northern Denmark in the 1990s by the knowledge embedded in its telecommunications cluster found that three had expropriated the knowledge they needed and shut down operations by the end of the nineties.[37]

Further, the consolidation of the customer base of many clusters, particularly those in consumer products, is playing havoc with their profit margins. Clusters like North Carolina's hosiery industry, that once sold to dozens of distributors or retailers now have fewer and much larger customers that are global chains such as Wal-Mart, Target, and Sears. These customers are able to transfer their risks to the small producers by squeezing them, forcing them to take back unsold merchandise, meet tighter delivery requirements, and reduce costs. In a New York knitwear cluster, one high end company was told by a large department store chain two weeks before delivery that it had to cut it costs by one third or the chain would cancel its order.[38] The greater the scale of the customer, the more power they exert over clusters of SMEs.

Capital gaps

If clusters are to produce new firms and support the growth of their innovators, they need timely debt and/or equity capital. In those growth clusters that are technology dependent, the investments can be quite high. For example, the displaced machinist who once could buy a few used machines and set up shop in a garage now needs computer numerically controlled multi-axis machines and CAD software and technical support. For many, the capital necessary to take advantage of promising market opportunities is very difficult, if not impossible, to find—for a number of reasons.

Location is one factor. Venture capitalists prefer to invest in companies near enough to monitor and to assist, but venture capital companies are highly clustered in a small number of large metro centers. Venture capital also is not very patient and therefore generally is limited to companies or industries entering the takeoff stage, not in a mature stage. This creates a gap for more isolated regions and older industry clusters. Further, in rural areas the consolidation of the banking industry has distanced capital sources from communities making it difficult to even acquire working capital.

Another issue—which has been exacerbated by consolidation of banking—is insufficient knowledge of local clusters and their markets. A few more established clusters have been able to develop relationships with local bankers who have come to understand and thus respond to their needs. For example, one executive of a local bank in Hickory, North Carolina is an active participant in the Carolina Hosiery Association, knows the members on a personal level and trusts them, and is more likely to fulfill loans requests.

The third, and biggest barrier for many low-income and minority individuals, is their lack of credit history, of access to family savings, and of the connections to obtain even the very small loans needed to get started. The median value of the total of all of their assets, both liquid and property, for participants in one set of sector employment programs was only $3,000.[39] A survey of minority owned small manufacturers in North Carolina and Mississippi found that capital was the biggest barrier they had to overcome.[40] Some of the leading community development programs, such as the Center for Community Self-Help in North Carolina and the New Hampshire Community Loan Fund, target customers that have good ideas but lack the connections to find the money needed to get started.

VII. Ideas for Expanding Opportunities to People, Places, and Firms

Cluster strategies, to reiterate, are driven by employers' needs, not the economic interests of particular individuals or places. Yet, participants agreed, those government and non-government organizations that are concerned with the distributional impacts of investments in economic development may be able to more effectively achieve their goals by orienting programs toward cluster-based development policies.

Many suggestions for low- and middle-income people, began with ways to raise skill levels and make the right connections, including learning from and, in some places, readjusting or reconfiguring the many successful sector strategies to mesh with the cluster development efforts. For smaller and marginal businesses, participants suggested encouraging networks able to produce some economies of scale, establishing stronger connections to each other and to benchmark practices, and making it easier to identify and acquire services. Many of the suggestions for regions with weak economies revolved around re-directing products and skills currently embedded in mature clusters towards higher growth products and services, and strengthening networking and entrepreneurial support networks.

The work force is often found to be the most pressing problem facing a cluster and its first choice for collective action.

Some of the ideas that emerged from the discussions included qualifying more people, imparting knowledge and know how through community colleges, identifying roles for intermediaries, creating opportunities and career paths, engaging modernization agencies, using networks, providing incentives and resources, working with cluster associations, loosening cluster boundaries, and supporting innovation and entrepreneurship, and pursuing niches.

1. Qualify people for employment

Inevitably the first issue that draws attention from cluster organizations is the competencies and availability of labor. Skills, Jane Jacobs asserts, which comprise the "gene pool" of successful economies, are essential for value adding businesses, and are one of the few specialized factors of production that companies must acquire locally. Supplies and certain services can be purchased almost anywhere, but not mid-skilled labor. Therefore, it is not surprising that the work force is often found to be the most pressing problem facing a cluster and its first choice for collective action. Mature clusters, in particular, face shortages of skilled labor. The aging skilled work force combined with a reluctance of young people to consider manufacturing careers is causing compa-

Table 2. **Summary of Actions for Low-and Middle-Income Populations, less Advantaged Regions, and Small Businesses**

Action	People	Places	SMEs	Obstacles addressed (See Table 1)
Qualify for employment	Pre-employment & language training	Ensure access, support services	Invest in basic skills and literacy	Basic skills & experience
Develop cluster specific skills	Use cluster context, internships	Support cluster centers	Form skills alliances	Relevant skills & experience
Identify appropriate intermediaries	Work through CBOs*	Connect clusters to other places	Offer extension-type services	Intermediaries that can't "talk the talk"
Create employment opportunities, career paths	Expand informal job information	Promote diversity and tolerance	Develop inter firm career ladders	Social exclusion
Engage modernization organizations	Develop technical capacity in CBOs	Make SMEs part of economic dev.	Assess needs, aggregate demand	Skills & experience Insularity & isolation
Facilitate business networks and skills alliances	Awareness of excluded labor pool	Regional learning connections	Encourage cooperation	Social exclusion Insularity & parochialism
Provide resources to offset diseconomies	Employment, training tax credits	Location incentives	Capital, investment incentives	Capital gaps Insularity & isolation
Work with cluster associations	Encourage social responsibility	Introduce triple bottom line	Organize micro-enterprises	Intermediaries that can't "talk the talk"
Loosen cluster boundary requirements	Consider longer commutes	Links to clusters, micro-clusters	Extend connections	Getting there from home
Support innovation and entrepreneurship	Develop entrepren. skills, know how	Create supportive environment	Support non-R&D related innovation	Capital gaps Branch plant domination
Pursue niches	Build individual skills portfolios	Utilize regional assets	Exploit core competencies	Chasing the New Economy

* CBOs are community-based organizations.

nies to offer bonuses to new hires, and even to those who refer them.

Low- and middle-income people without relevant work experience that want a chance to climb onto a career ladder need certified basic and soft skills. This qualifies them to even be considered for jobs with a future. The new Nissan plant in Canton, Mississippi will not accept applicants without at least 18 months work experience on the job, not to demonstrate technical competency but as evidence of social skills and good work habits. Fewer and fewer employers in value-added clusters hire individuals with less than a high school diploma, and an increasing number expect some post-secondary education or certifications. The low levels of educational attainment and achievement in inner city neighborhoods and among so many rural communities is the nemesis of opportunity. Education is the first step onto career ladders and fundamental to any glimmer of hope for attracting higher growth companies.

The majority of social service and community-based programs that work in low-income communities provide support systems, work experiences, and, where needed, basic or language skills that enable enrollment. The most effective pre-employment and employment programs have been those that embody real work experiences that prepare for good jobs, such as the employment programs offered by members of the National Network of Sector Partners.

Raising educational levels has long been recognized as fundamental to the achievement of both the social and economic goals of any region, and regions that rank low compared to competitor regions often resolve to improve their rankings. Community colleges, which accept any and all applicants at relatively low costs, are most regions' leading source of postsecondary job skills. They cater to large numbers of low-income youth and working adults, many from families where no member had ever set foot in a college. New students who fail to qualify for a career program can still enroll in courses that allow them to earn the qualifications and become comfortable in a college setting. The Ford Foundation's new Bridges to Opportunities Initiative is an effort to develop seamless paths to and from community colleges for working adults by recognizing competencies acquired in a variety of formal and informal settings.

2. Work with community colleges to impart cluster-specific knowledge and know-how

While community colleges and nonprofits effectively prepare regional pools of individuals with the basic qualifications to enter the specialized labor markets, the ultimate labor market advantages lie in the specific skills needed by the cluster together with the experience and know how to apply them to their particular workplaces. Community colleges, which serve regional economies and low-income populations, are in the best position to deliver the specific skills that match the cluster's needs. For example, colleges can use the work environment of the cluster as a context for designing and delivering program curricula, lending practical meaning to the instruction and aligning it with real work. Using a cluster as context can even be used in readiness and basic skills programs. Programs like Vocational English can be more effective if the vocabulary used is related to that used on

the job. Catawba Valley Community College in North Carolina teaches English as Second Language using terms common to its hosiery cluster. While some sector employment programs do offer some of the higher level skill development, the best of them work in cooperation with the colleges to provide credentials that move participants up career ladders.

The other way that colleges increase know how is by supporting work-based education. Work experience—required in most European schools—gives students a chance to directly apply classroom knowledge and employers and potential employees a chance to get to know each other to better assess employment possibilities. In New York City, the New York New Media Association and New York Software Industry associations operate internship programs in high schools, community colleges, and universities that allow minorities and low-income youth to learn about the cluster and firms a chance to learn about the students.[41] Internships also can lead to full-time employment. Case studies of community colleges operating in four different clusters found that "close ties between faculty and employers and informal labor market information networks make traditional college placement services superfluous." With education tailored to the work of the industries and students well prepared for the jobs in the industries, employers interviewed expressed high levels of satisfaction with graduates.[42]

3. Identify and work through appropriate intermediaries

While intermediaries have become potent tools for achieving social ends, the term intermediary—like the term cluster—has been "dangerously overused" in the field of workforce development.[43] Intermediaries have become answers to problems ranging from business startups to career ladders. Intermediaries stand for organizations with certain knowledge and interests that enable them to match supply to demand, whether it's about labor, information, knowledge, or technology. From the business perspective, they act as filters to find best supply from a large universe, provide services that better fit the supply to the demand, and improve the quality of the supply. Most small firms in rural areas or urban neighborhoods not only lack access to such information but also are unable to navigate the complex set of programs that might provide it to them. They have too little knowledge of the events and trends that can affect their business future. Effective industry-specific intermediaries can aggregate the needs of companies, trace the region's supply chains, and provide the services, information, and connections to suppliers or customers that are not affordable individually, the specialized information that firms need to compete.

Community colleges, which serve regional economies and low-income populations, are in the best position to deliver the specific skills that match the cluster's needs.

For purposes of discussion, business intermediaries that are necessary for getting a product to market, such as freight forwarders and distributors, are not included. The intermediaries of most use in reducing economic disparities are those organizations that serve special popula-

There's still gold in those hills

Nevada is the world's third largest producer of gold. Despite falling prices, the gold industry remains the region's primary economic engine. But skilled workers for occupations critical to the success of modern-day mining have been hard to find. To create a pipeline of qualified technicians for the industry, Great Basin College created a Mine Maintenance Training Program as a collaborative effort between the college and the cluster. In the 1990s, as more mining companies in the area joined the cluster alliance, a program was developed with flexible scheduling, high impact, and industry participation. Companies offer scholarships to students who then work for a summer at their sponsoring company, attend classes full-time for a semester, and then spend one-fourth of their time at school and the remaining part of the one and a half years at work. At the end of two years, students earn an associate of science degree. (More information available at http://www.rtsinc.org/benchmark.)

tions or communities, target small or start-up enterprises, or work to develop weak economies. Such intermediaries are important mechanisms that allow people, places, and firms to successfully gain access to information and to the network, in order to take advantage of economic opportunities. In Silicon Valley,[44] private sector temp agencies, workforce development boards, and membership-based organizations make the connections for many of those seeking new or different jobs.

The intermediaries represented and described by participants might be classified as those that: [45]

- direct services to the incumbent and potential work force, including training, support, employment, and advancement;
- deliver services to companies and entrepreneurs, which include technology, business assistance, capital as well as training; and
- operate mainly as brokers and facilitators to make connections.

The most effective intermediaries meet all three needs, but the intermediaries' perspective on what their main focus is, whether individuals, firms, or the connections between, establishes their primary mission and mode of operation. Although many organizations aspire to operate as intermediaries, too many are greatly underfunded or underutilized and spend much of their time soliciting potential customers. Ineffectiveness may be due to lack of resources or poor marketing. But it also can be the result of a service being insufficiently valued or specialized.

Most of the community based intermediaries that connect underemployed and unemployed people to jobs have much stronger ties to the supply side, i.e., the individuals that need help or educational institutions, than to the demand side represented by a specific set of industries. Assessments of intermediaries have shown that typical success factors include: acting like a business, employing staff with sufficient industry experience to speak the language of the cluster, and developing real relationships to the cluster's leaders.

In some locations, organized labor has been the intermediary that did the training and worked with employers to build

career ladders. Experiences in the U.S. and Europe with sector-based training initiatives that involve organized labor, such as the Labor-Management Council for Economic Renewal which assists small auto suppliers in Michigan, found that such initiatives expand the breadth of employer participation in the clusters, achieve economies of scope by addressing multiple shared needs of firms, and ultimately raise skill and wage levels.[46] The Wisconsin Regional Training Partnership (between unions and employers), founded in 1992, works with 60 firms that employ 60,000 workers. Working with the local technical college, the partnership provides incumbent worker training but also modernization services, employment services, and school-to-work transition programs.

The next three suggestions address specific objectives of intermediaries.

4. Create employment opportunities and build career paths

Most intermediaries in economic development that advocate for low-income people and places ultimately must address employment and training. Many of the sector employment approaches mentioned earlier are intended to improve the transition of low to mid-skill workers and the underemployed into better jobs and onto career ladders. Enough of these programs have been evaluated to measure outcomes and identify common factors associated with success.[47] A survey by the Aspen Institute of employed low-income participants in sector employment programs showed a 64 percent average income growth over the previous year. Sixty-six percent more were receiving paid vacations, and 56 percent more received medical benefits.[48]

Participants in focus groups on workforce issues organized by the Ford Foundation[49] concluded that the most effective training organizations adopt an internal culture that resembles the culture and models the environment of employers. The best organizations, they found, "are more than brokers or bridges between disadvantaged communities and industry. Such organizations articulate career paths, develop standardized training for an industry, and establish minimum standards on job quality." Larger institutions, such as community colleges, this group believed, generally are better able to do this—that is, if they can react quickly enough to the sectors' needs.

Effective employment programs recognize the importance of social capital for building connections. In any economy, whether skill based or knowledge based, people get ahead on the basis of who they know, as much as what they know. Hiring is based on referrals and informal networking, business deals are consummated at coffee shops and bars, and certain club memberships open doors that are not open to non-members. Most networks and informal grapevines don't work well for people, places, and firms that are isolated by social, cultural, or geographic barriers. Those on the outside need help in order to access and navigate

Most of the community based intermediaries that connect underemployed and unemployed people to jobs have much stronger ties to the supply side.

through the multitude of information and services that can help them.

One reason that disadvantaged youth and unemployed people fail to enter—or if they do, drop out of—the education and training system is the inability of the labor market system to convincingly communicate economic payoffs.[50] In most places, this requires an organization that can act as a neutral broker, filter, observatory, and advisor for those who are socially, culturally, or economically isolated.

Intermediaries can overcome some of the barriers by becoming part of the networks, building relationships with employers, and finding ways to extend their own cluster know who to their constituents so that their recommendations are valued and trusted. Intermediaries that set up internships and other work experience opportunities for low-income youth or unemployed workers, for example, give them the chance to get to know employers and fellow employees and enter job-related social circles.

Intermediaries that effectively reach and serve low-income populations and small firms are illustrated by those organizations studied under the Aspen Institute's sector employment development learning project. For example, the Jane Addams Resource Corporation (JARC) in Chicago assists low-income people in obtaining decent employment in metalworking industries. Working in collaboration with companies, JARC offers a range of training from pre-employment to advanced technology skills. It also organizes companies into networks, creating higher levels of cooperation and trust and building social capital.[51]

5. Engage organizations that support modernization and innovation

Intermediaries that operate inside of the clusters and help small firms locate and take advantage of technologies, resources, information, and markets are particularly well suited for expanding economic opportunities. Some of the most successful technology intermediaries, for example, have been able to relate the modernization needs of firms to the skill development needs of their workers. One of the strongest assets in Emilia-Romagna's industrial districts is the industry-specific hubs for artisan firms that amass information and advice concerning global markets, competitors, new technologies, and training needs.

Those organizations that have technical experience in particular clusters and operate in low-income regions are able to meet the dual needs of employers and employees. Most of the technology-oriented intermediaries, however, measure their success in terms of business outcomes without consideration for the unemployed, underemployed, or displaced workers—or the very small firm—unless the bottom line will be affected; thus, specific financial incentives or subsidies are often required. Intermediaries surveyed in Appalachia[52] were found to have multiple roles that included market coordination, research and development, brokering networks, and strategic planning in addition to skill upgrading, but the most common intermediaries—the traditional business associations—offer little to workers in the way of training or structured career paths and reach few small companies. The most successful efforts merge programs targeting company outcomes, such as the Man-

ufacturing Extension Partnership, with programs targeting equity, such as the employment training programs of the U.S. Department of Labor.

A few of the sector based employment programs complement training with innovation services. The Garment Industry Development Corporation (GIDC), started in 1984, is a tripartite effort of government, industry, and labor that supports New York City's struggling garment industry, an important source of employment for low-income people.[53] GIDC introduced systemic changes in a threatened industry to improve wages and career opportunities, and became a catalyst and information broker, helping to identify new markets and introducing more modern production technologies and methods, as well as getting unskilled, displaced, and immigrant workers ready for the new workplace.

6. Facilitate and support business networks and skills alliances

At about the time the Manufacturing Extension Partnership was gearing up in the U.S., policy makers were also discovering companies in northern Italy competing in very specialized global markets, with as few as six employees each. The success of these highly specialized artisan firms was due to geographic concentration of tacit knowledge and a willingness to cooperate. They were aided by trade associations that provided real services, hubs that filled market gaps in services, and a culture that valued collaboration as well as competition. Clusters, Italy showed the world, are able to benefit the smallest of businesses if the firms collaborate. Networks within clusters gave Italian firms the external economies that large firms are able to generate internally. Some of these production networks were formed as informal subcontracting arrangements but others were more formal arrangements that involved full-time brokers.

Building networks depends largely on the ability of intermediaries to broker and manage inter-firm collaboration. Since managers of SMEs are rarely able to commit the time and resources necessary to develop collective solutions to common problems and establish joint services, they need external assistance. Networks, the precursor and companion to most cluster programs, have already been proven as an effective way to aid less advantaged regions and very small companies. In 1996, the Corporation for Enterprise Development reviewed some of the community-based organizations (CBOs) that had begun building and supporting business networks. Based on what these benchmark projects had achieved, CfED suggested that CBOs use networks to increase job opportunities for inner-city residents and target minority firms and that the national

Those organizations that have technical experience in particular clusters and operate in low-income regions are able to meet the dual needs of employers and employees.

Manufacturing Extension Partnership make collaboration a criterion for measuring effectiveness.[55]

In retrospect, many of the most lasting successes in network building were in effect cluster strategies that targeted regions and mature industries that were losing

Wood U.

Forests are common roots of clusters in rural areas. But some wood based clusters never get beyond cutting and shipping lumber while others parlay their advantage into exporting high-end customized final products. The latter is dependent on both technology and workforce skills. Pennsylvania's Northwest Industrial Resource Center (NWIRC), the agency that is charged with helping companies adopt technology, responded to the low-income Appalachian region's wood-based cluster with a "Wood Products Initiative." Too much raw material was being shipped out, only to return as finished products from other countries, and companies couldn't find qualified workers even though the entry and advancement opportunities as well as wages were good compared to most service industries. The NWIRC conducted needs assessments, helped create seven training programs in schools that attracted 1,500 students, assisted 48 companies, and found ways to capture more of the value added within the cluster.[54]

competitive advantage. Grants were used to establish membership organizations that would build social capital, provide real services, and broker networks—which would be called a cluster council in today's terminology. The five regional "soft networks" (i.e., associations) funded by the Northwest Area Foundation in the mid-1990s that targeted five economically distressed rural areas were "soft networks" closely resembling regional cluster councils and, in turn, were expected to promote joint production, marketing, or product development networks among their members[56] to generate sales and create jobs.

Business networks provide members with economies of scale by sharing costs, experiences, and risks. Appalachian by Design in West Virginia, the Northeast Oklahoma Manufacturers Council in Okmulgee, and ACENet in southeastern Ohio are sustainable soft network programs that have been able to change with the economy. While not totally self-sustaining, each of these organizations has produced results by combining needs for training with modernization. The keys to their respective successes have been their ability to broker collaborative activity, provide useful technical assistance, and generate additional external funding for specific projects.

Networks have proven to be particularly useful for spurring training among SMEs that have been reluctant or unable to invest in the skills of their incumbent workforce. The U.S. Department of Labor has applied a cluster framework to its Regional Skill Alliances program, and the current authorization for the Appalachian Regional Commission includes funds for Regional Skills Partnerships. These networks result in reduced costs and more customized training for smaller firms, and they advance the career opportunities for those trained.

7. Provide funds to offset diseconomies and spur growth

This recommendation highlights two need areas where access to funds can make a difference. The first focuses on

Connecting Companies in Connecticut.

An important and successful element of Connecticut's cluster initiative is the Connecticut Business Training Networks. Since launched in 1999, the state can count among its successful and prospective regional skill alliances a metal manufacturers training and education alliance (META) aimed at firms and workers in the inner city of Bridgeport, an Spring Training alliance composed of five spring manufacturers, the Housatonic Education for Advanced Technology (HEAT) for the electronics clusters around Danbury, and an information technology alliance in Stamford. Following the phased funding process used in the earlier state business network program, each alliance can receive an exploratory grant, development grant, and operational grants. Beyond the third round of funding, skills alliances are expected to be supported by member companies.[57]

---

the role of incentives and subsidies. The second addresses access to startup financing and growth capital for cluster firms.

Incentives and subsidies can alter the economics of company investments and/or hiring decisions enough to benefit specific populations, businesses, or places that may have been ignored otherwise. Tax breaks, tax credits, government funded training, and loan guarantees can, in some instances, marginally alter business decisions—the rationale for many industrial recruitment and workforce development programs. Some contend that these financial incentives do not in the long run create competitive advantage.[58] Yet if subsidies can affect employers' behaviors, even in the short run, they can open doors by giving people opportunities to prove themselves and to make new connections, with lasting impacts. Such incentives are increasingly sought by cluster organizations to meet collective needs.

A second area is the need to explore innovative and effective ways to connect traditional and non-traditional debt and equity capital providers to clusters. Firms within the venture capital community have always tended to specialize in investing in certain industries and, in some cases, certain clusters. Some segments of the traditional banking community have followed suit. However, in both cases, these types of providers should not be regarded as major capital sources for firms in weaker local economies or in rural areas that feature clusters. On the debt side, such firms will be perceived as lacking business prospects and/or sufficient collateral to secure loans. On the equity side, even in strong markets, very few firms will meet the deal size, market size, growth prospects, margins, and competitive advantage requirements to qualify for venture investments. Traditional risk capital providers are even less likely sources, because earlier stage venture firms tend to invest close to home or co-invest with other (lead) firms that are investing close to home.

There are, however, non-profit organizations already servicing capital requirements in poorer regions and disadvantaged populations. Debt and equity capital is being offered by institutions that function as development banks in deed, if not always in name. These include Shorebank in Chicago and Cleveland, Southern

Development Bancorporaton in Arkansas, the Enterprise Corporation of the Delta in Mississippi, Arkansas, Louisiana, Kentucky Highlands in eastern Kentucky, and the Rural Economic Development Center and Center for Community Self-Help in North Carolina. These organizations often offer other services such as infrastructure and housing financing as well as technical assistance services for business. Recent developments at the federal level, including the New Markets Program and community development venture capital activities led by organizations such as the Appalachian Regional Commission, may also represent potent cluster link possibilities.

Capital access approaches that induce private capital market development or leverage private funds and can be oriented to service specific clusters should also be investigated. Capital Access Programs (CAPs) are based on a risk-pooling concept first introduced in the State of Michigan that expands private banks' capacity to make riskier loans to small firms. They differ from more conventional loan guarantee services because they are based on a portfolio approach rather on a loan-by-loan basis. Among government programs, CAPs are considered to be the most user-friendly and non-bureaucratic. They also feature a high degree of leverage for public resources. Assessments indicate that CAPs tend to service loans in the $25,000-$40,000.

Business and Industrial Development Corporations (BIDCOs) are non-depositary financial institutions designed to help meet the financing and management assistance needs of SMEs that do not qualify for conventional bank or venture financing. Some BIDCOs also provide startup or early stage financing and can be designed to focus on specific industries or clusters. BIDCOs get their capital from equity investors and, when sound enough, from bank loans. Dealing with higher risks and higher rates of return, BIDCOs complement the traditional bank borrower. They also tend to offer a much higher level of technical assistance to their customers because their return is tied to their customers' long-term fortunes.

8. Work with cluster associations

Among the most straightforward and effective mechanisms for achieving social goals is to work through cluster associations. The starting point for public sector cluster strategies is generally building or sanctioning some business association that can represent members of a cluster and act as a collective voice for the cluster—most commonly called cluster councils. There is evidence that the higher the level of associative behavior in a cluster, the more social responsibility member businesses will assume. Cluster councils, for example, are more likely than individual companies to recognize community responsibility because the individual actions of their members are more apparent to all.

In most communities, acting to improve the "bottom line" is balanced by the desire for approval by peers, community leaders, and associates, and therefore enlightened companies will take actions not justifiable on purely economic terms. Clusters have their own distinctive culture, which may have social and altruistic dimensions because business decisions are frequently informed gut decisions that balance personal interests with economic outcomes. The social capital created by

clusters increases the likelihood of a collective conscience. A recent publication that highlighted one benchmark workforce development practice for each southern state named "addressing workforce needs through private sector industry clusters" throughout Mississippi.[59] This means going out into some of the nation's poorest communities to find qualified workers. Joint Venture, Silicon Valley's February 2002 newsletter, invited members to take part in two upcoming corporate workshops on the value of the "Triple Bottom Line" for businesses and on ways to develop consistent policies and practices.

The "triple bottom line" framework measuring community performance according to not only economic but also social and environmental outcomes can become a realistic goal in places where businesses take pride in their environment and want a safe and attractive place, one that will attract and retain talent and where owners' and employees' children will consider living.

Making choices for the good of the community may require some encouragement and education by community organizations. It doesn't always occur spontaneously. The introduction of social goals into a cluster's agenda can be enhanced by establishing formal roles for "third sector" organizations, including intermediaries, that have related interests in the environment, civil society, and equity. This is best done by either convincing cluster associations to recognize non-profit associate memberships or forming working committees on common issues that include non-governmental organizations.

Cluster organizations can add value by including student and young worker committees. Such committees would create learning and networking opportunities for the next generation of technical workers and entrepreneurs and allow them to take part of a larger collective entity.

9. Loosen cluster "requirements"

Inner city neighborhoods and small rural communities may appear to lack concentrations that meet typical requirements for "clusters" if boundaries are defined too narrowly. Neighborhoods are better served by a perspective that includes them as part of larger regional economies and clusters and by looking for ways that residents can commute to work or operate services and retail businesses drawing on those employed in the cluster.[60] Inner city businesses depend heavily on proximity to their customers, including those living in surrounding suburbs.

The same can be said about rural communities in much of the eastern U.S., where distances are short enough to permit satellite operations of larger clusters. The small group of hosiery producers in Mt. Airy, North Carolina is close enough to the hosiery cluster hub in Hickory to take advantage of relationships and externalities. Other rural areas have simply lowered their scale requirements. Two contiguous counties in Nevada, Lander and Eureka, with a combined population of less than 9,000 in 2000, identified seven areas in which they claim some special expertise and competitive advantage: mining, alfalfa/hay, artisan crafts, retirement, local services, and transportation.[61] While only the first three and possibly retirement are value added clusters, they provide the counties with a focus to their development and entrepreneurial efforts.

10. Encourage and support innovation and entrepreneurship

Although innovation is what fuels clusters, entrepreneurship is what grows them. Every known competitive cluster has both innovators and entrepreneurs—plus numerous imitators to take the cluster to scale. In most clusters, however, innovation cannot be measured and represented by patents, new products, or new services. It is rooted in the ways technologies are used, management systems designed, products marketed, and labor organized and used. The non-R&D generated ideas that lead to new products, services, markets, companies or to self-employment, particularly in mature clusters, are too often overlooked as wealth generating and cluster building opportunities.

The economic growth opportunities for low- and middle-income populations may be far greater in self employment than in slowly moving up career ladders. Entrepreneurship has been used extensively in disadvantaged regions with mature or declining clusters only, downsized or closed plants, and large numbers of unemployed semi-skilled and skilled workers. Entrepreneurship can also be a way for underemployed and part-time workers to supplement their income. Indeed, people generally embark on an entrepreneurial path for one of three reasons: as a survival strategy to supplement low wages or tide them over until they get better employment; as a life style choice to have more control over their own work life while earning a living; or to grow a company and build employment based on filling a need, exploiting an innovation, or making a better product.

Entrepreneurial endeavors collectively are a big business in the U.S. In 1999 more than half of the businesses that filed tax returns were home based and three in ten were full time.[62] The home-based businesses are likely to be in rural areas, female owned, and require less than $25,000 to start. Firms begun out of personal necessity, the first reason, are generally in a support service sector and, while they raise the income of the owner, they do less for the region than firms that export goods or services. Both the lifestyle companies and the growth companies, however, can strengthen and be strengthened by a cluster. An interim assessment of the Entrepreneurial Initiative of the Appalachian Regional Commission (ARC) found in interviews of businesses in distressed or transitional counties supported by the program, 55 percent were lifestyle businesses and 36 percent planned to grow.[63]

While sectoral employment programs have helped people find jobs and advance, a similar set of entrepreneurial programs have been helping low-income people to start companies and small companies to grow. The ARC program, for instance, funded dozens of programs in poor counties—many organized around clusters. In some of the least developed districts, the more successful efforts used networks as mutual support mechanisms. Some of the most successful entrepreneurs operate in the underground economy that, if it could be measured, might reveal significantly higher income from self employment and home-based businesses.

Innovation and entrepreneurship depend on a willingness to take risk, but even if the ideas and willingness are there, it takes more. It requires a different

set of business skills and knowledge, as well as connections, than employment. Most employment and training programs for low-income populations focus on the skills that lead to quick employment, not on the industry "know what" necessary to run a business. The know how needed by entrepreneurs is more likely to come from experiences in family and neighborhood businesses than from school or internships in large corporations. Thus, entrepreneurship is in part "hereditary." A recent report from the National Commission on Entrepreneurship noted the importance of networks, alliances of entrepreneurs "who share ideas, learn from one another, and do business together."[64] In rural communities sampled throughout the U.S., researchers found that an "Entrepreneurial Social Infrastructure" is highly related to community self-development that results in increased jobs and incomes.[65] This social capital includes the ability to look at alternatives, to accept diversity of internal and external networks, and to sustain an ability to mobilize resources.[66]

11. Find a niche and go for it

Economic development experts often exhort companies in industries that are slipping toward the end of their product cycle to "move up the value added chain" in order to compete. This often means higher wage jobs. In developed regions with higher labor and living costs, companies have to concentrate on niche products and services that still require research and development or special design skills that depend on experience, tacit knowledge, and creativity. Part of the success of Emilia-Romagna's tiny artisan production firms is their ability to specialize and to preserve a level of tacit knowledge and experience, giving them nearly insurmountable competitive advantages.

Regions have the same opportunity to find a niche in which some special expertise or local resource can provide a competitive edge, some area in which a region or community can distinguish itself and build a reputation for excellence, a mark that attracts customers. That niche might be found in the most unlikely industries. For example, the once dying town of Hay-in-the-Wye in Wales found its niche in used books. It now is home to 35 bookstores that draw buyers from all over the United Kingdom and Europe. While every town can't be a used book hub, distant imitators can be successful, and Redu in Belgium and now Joie de Livres in France have replicated the Welsh town's success. The latter, in true cluster building fashion, also now has a calligrapher, bookbinder, printer, and papermaker.

Finally, individuals can also find their own niche in the clusters—something related to the cluster that they are good at—and build a personal portfolio to document efforts, credentials, and experiences that bear on that niche. While probably not a good approach for those with little education and work experience, it may help people that have a work and education history to identify career ladders and advance along them.

VIII. What's Next?

If clusters are going to become the economic development strategy of choice in the U.S., those organizations charged with expanding economic opportunities will have to consider not only the size of their regions' economic pies but the way they are sliced. Just as organizations concerned with distributional effects of economic development shaped their past efforts to fit into industrial recruitment, entrepreneurship, technology transfer, networks—and any and all of the various tools that governments have used to generate jobs—they now must think about how to take advantage of cluster-based approaches.

Clusters may become even more important than previous strategies because they represent not a single development tool but a framework for understanding and building economies. Part of that improved understanding ought to include ways to extend the existing systemic relationships to include people, places, and firms that have been on the periphery of the economic mainstream. The mere existence of clusters offers only limited promise for disadvantaged individuals or places, but clusters can intentionally forge a pathway leading to higher incomes and stronger economies. An examination of systemic relationships may reveal previously unnoticed common or collective competencies, hidden specialized resources, and ways to aggregate strengths that have the potential to take advantage of cluster tools, social capital, and externalities.

This process will take re-education, resources, and time for the nation's many public sector agencies and private organizations that lend a hand to less advantaged populations and weaker regions. They will have to figure out how to best use the cluster framework to get more people onto and up career ladders, firms on growth paths, and places into successful regional production systems and implement strategies that accomplish those goals.

The single most important theme that cut through all of the discussions and nearly all of the recommendations is connections, or what is termed social capital. Implicit in all of the discussions is the social capital that undergirds the systemic relationships within the clusters, the social infrastructure that moves information and affects employment and economic opportunities and innovation. People, those places, and firms that are unable to benefit from—or worse, are cut off from—the social capital of clusters are severely handicapped in any economy, but more so in a knowledge-based economy that depends on "know who" to build "know how." Clusters, because they are systems, provide opportunities for extending social capital to more people and more places. This report suggests useful and practical strategies that can extend the benefits of clusters to more people, places, and firms.

IX. End Notes

1. From speech given in 2000 as cited in Richard Florida, *The Rise of the Creative Class*. New York: Basic Books, 2002.

2. Beth Siegal and Peter Kwass, *The Potential of Sector Economoc Development as an Anti-Poverty Strategy*. Boston: Mt. Auburn Associates, March 1995.

3. Mid-skilled labor force refers to those people in occupations that generally require less than a baccalaureate degree, such as manufacturing technicians, sales staff, network administrators, medical technicians, etc.

4. Peter B. Doeringer and David G. Terkla, "Business Strategy and Cross-Industry Clusters," *Economic Development Quarterly* 9 (August 1995) 225-237.

5. Kevin Morgan. *The Exaggerated Death of Geography: Localized Learning, Innovation and Uneven Development*. Paper presented at the Future of Innovation Studies Conference, Einhoven University, September 20-23, 2001.

6. Lead author's interview with Nissan's director for training in Canton, Mississippi, June 2002.

7. Edward Bergman, Background paper #2.

8. *Redefining Corporate Responsibility in a Global Economy: An Agenda for Action*. Boston: Jobs for the Future, 1996.

9. Karl Sigmund, Ernst Fehr, and Martin A. Nowak, "The Economics of Fair Play." *Scientific American*, January 2002. 83:87.

10. Noel Horn and Paul Shaefer, *Taking Care of Civic Business*. Grand Rapids, MI: Frey Foundation, 1992.

11. Lee W. Munnich, Jr. and Greg Schrock, *Rural Knowledge Clusters: The Challenge for Rural Economic Prosperity*. Hubert H. Humphrey Institute, Staff Draft Working Paper, January 2002.

12. Joe Cortright, *New Growth Theory, Technology and Learning: A Practitioners Guide to Theories for the Knowledge Based Economy*. Draft report to the Economic Development Administration, Washington, DC: U.S. Department of Commerce, 2000.

13. Author's notes from a focus group of small IT companies in New York City, 1999.

14. Survey of Illegal Drugs. 2001. "Stumbling in the Dark." *The Economist*. Special Section, July 28, 2001, p. 3.

15. Rosabeth Moss Kantor, *World Class*. New York: Simon & Schuster, 1995.

16. Michael E. Porter, et al, *Clusters of Innovation: Regional Foundations of U.S. Competitiveness*. Washington, DC: Council on Competitiveness, 2001.

17. Robert Reich, *The Future of Success: Working and Living in the New Economy*. New York: Vintage Books, 2000.

18. OECD, *Innovative Clusters: Drivers of Innovation Systems*. Paris: Organization for Economic Cooperation and Development, 2001.

19. Aaron Bernstein, "Down and Out in Silicon Valley." *Business Week*. March 27, 2000, 76:92.

20. Foster-Bey, John, Stuart Rosenfeld, Paul Pryde, and Vance Gragg, *Linking Low-Income People to Economic Opportunity in Palm Beach County*. Final Report to the John D. and Catherine T. MacArthur Foundation. Washington, DC: The Urban Institute, 1999.

21. Landabaso, Mikel, C. Oughton, and Kevin Morgan, *Innovation Networks—Concepts and Challenges in the European Perspective*. Paper presented at the Fraunhofer Institute in Karlsruhe, Germany, November 18, 1999.

22. Altenburg, Tilman and Jorg Meyer-Stamer. "How to Promote Clusters: Policy Experiences from Latin America." *World Develop*ment 27 (No. 9, 1999) 1693:1713.

23. Navdi, Khalid and Hubert Schmitz. *Industrial Clusters in Less Developed Countries: Review of Experiences and Research Agenda*. University of Sussex, Institute of Development Studies Working Paper 339, January 1994.

24. "No end in sight to N.C. job losses." *The News and Observer*, Raleigh, North Carolina, August 18, 2002.

25. Manufacturing Studies Board Research Council, *Reactions of Small Machine Shop Owners to the Automated Manufacturing Research Facility of the National Bureau of Standards*. Washington, DC: Government Printing Office, 1985.

26. Erik Parker, Background Paper #2.

27. Anthony P. Carnevale and Donna M. Desrochers, *Help Wanted…Credentials Required*. Princeton: Education Testing Service, 2001.

28. Doug Henton, "A Profile of the Valley's Evolving Structure." in Chong Moon Lee, et al (Eds) *The Silicon Valley Edge*. Palo Alto: Stanford University Press, 2000.

29. Michael J. Enright, *Organization and Coordination in Geographically Concentrated Industries*. Working Paper 93-051, Cambridge: Harvard Business School, 1993.

30. Peggy Clark and Steven L. Dawson, *Jobs and the Urban Poor: Privately Initiated Sectoral Programs*. Washington, DC: The Aspen Institute. 1995.

31. Duncan, Cynthia, *Worlds Apart: Why Poverty Persists in Rural America*. New Haven, CT: Yale University Press, 1999.

32. Foster-Bey, et al, *Linking Low-Income People to Economic Opportunity in Palm Beach County*. 1999.

33. Richard Florida, *The Rise of the Creative Class and How it's Transforming Work, Leisure, Community, and Everyday Life*. New York: Basic Books, 2002.

34. Manuel Castells, *The Rise of the Network Society*. Volume I, Oxford: Blackwell, 1996.

35. See Bennett Harrison, *Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility*. New York: Basic Books, 1994.

36. Eric Scholler, *Fast Food Nation*. (New York: Harper Collins Perennial, 2002, p. 141.

37. Mark Lorentzen and Volker Mahnke, "Global Strategy and the Acquisition of Local Knowledge: How MNCs Enter Regional Knowledge Clusters." Danish Research Unit for Industrial Dynamics, Working Paper 02-08, University of Aalborg, 2002, www.druid.dk.

38. Leslie Kaufman, "For Clothing Makers, It's Cut or Be Cut." *The New York Times*, Section 3, Sunday, January 6, 2002.

39. Mark Elliott, et al, *Gearing Up: An Interim Report of the Sectoral Employment Initiative*. Philadelphia: Public/Private ventures, 2001.

40. Stuart Rosenfeld, Dan Broun, and Cynthia Liston, *A Piece of the Action: Increasing Minority Ownership of Manufacturing in the Rural South*: A Report to the Tennessee Valley Authority. (Carrboro, NC: Regional Technology Strategies, October 1997).

41. Stuart Rosenfeld and Brian Bosworth, *Building Skilled Work Forces for New York's Regional Economies*. Carrboro, NC: Regional Technology Strategies, 2001.

42. Stuart A. Rosenfeld, "Cluster/ Community College Connections." *Economic Development Quarterly*, 14 (No, 1, February 2000) 51:62.

43. Robert Giloth, "Learning from the Field: Economic Growth and Workforce Development in the 1990s." *Economic Development Quarterly* 14 (November 12000) 340:359.

44. Benner, Chris, *Building Community-Based Careers: Labor Market Intermediaries and Flexible Employment in Silicon Valley*. Paper presented to Association of Collegiate Schools of Planning Annual Conference, Chicago, October 21-23, 1999.

45. The Shorebank Enterprise Group suggests a framework for intermediaries to link neighborhoods to clusters that differentiates between direct service providers and membership/non-membership organizations. Paul Christenson, Nan McIntyre, and Lynn Pikholtz, *Bridging Community and Economic Development: A Strategy for Using Industry Clusters to Link Neighborhoods to the Regional Economy*. Draft report to the Ford Foundation. (Cleveland: Shorebank Enterprise Group, December 2001.

46. Erik Parker and Joel Rogers, "Sectoral training Initiatives in the U.S." in Pepper D. Culpepper and David Finegold (Eds) *The German Skills Machine*, 1999.

47. Beth Siegel and Peter Kwass, *Jobs and the Urban Poor: Publicly Initiated Sectoral Programs*. Boston: Mt. Auburn Associates, 1995.

48. Maureen Conway and Lily Zandniapour, *Closing the Gap: How Sectoral Workforce Development Programs Benefit the Working Poor*. Washington, DC: The Aspen Institute, 2001.

49. John Colburnand Mara Manus, "Focusing on Workforce: Summary Findings of Focus Groups Conducted for the Workforce Development Program of the Ford Foundation." New York: The Ford Foundation, 2000.

50. Marc Bendick, Jr., "Connection Inner-City Youth to the World of Work." Draft Program Statement for the Committee for Economic Development, December 1995.

51. Amy Glasmeier, Candace Nelson, and Jeffrey Thompson, *Jane Addams Resource Center*. Washington, DC: Aspen Institute Sectoral Employment Development Learning Project. December 2000.

52. Lynn E. McCormick, *An Analysis of the Economic Development Role of Business Intermediary Organizations Serving Appalachian Industries*. Washington, DC: Appalachian Regional Commission, 2000.

53. Conway, Maureen and Suzanne Loker, *The Garment Industry Development Corporation*. Washington, DC: Aspen Institute Sectoral Employment Development Learning Project, November 1999.

54. Fred D. Baldwin, "Business Clusters: Building on Local Strengths," *Appalachia* September-December 2001.

55. Carl Rist and Puchka Sahay, *Community-Based Organization and Business Networks: New Ideas for Creating Job Opportunities for Inner-City Residents*. Washington, DC: Corporation for Enterprise Development, December 1996.

56. Stuart Rosenfeld, "Does cooperation enhance competitiveness? Assessing the impacts of inter-firm collaboration." *Research Policy* Volume 24, 1996.

57. Governor's Council on Economic Competitiveness and Technology, *Industry Clusters: Progress Report, February 2001*. Hartford: State of Connecticut Department of Economic and Community Development, 2001.

58. Michael E. Porter, "The Competitive Advantages of the Inner City." *Harvard Business Review*, 73 (May-June 1995), 55:74.

59. Jim Clinton and Carol Conway, *The Mercedes and the Magnolia: Preparing the Southern Workforce for the Next Economy*. Research Triangle Park, NC: Southern Growth Policies Board, 2002.

60. Michael Porter, "New Strategies for Inner-City Economic Development." *Economic Development Quarterly*, 14 (No.1, February 2000).

61. Don Macke, *Micro Cluster Analysis*. Unpublished paper for the Rural Policy Research Institute, Columbia: University of Missouri, 2001.

62. Bruce Phillips, "Home Based Firms, E-Commerce, and High-Technology Small Firms: Are They Related?" *Economic Development Quarterly* 16 (February 2002) 17:19.

63. RTS, *Initial Evaluation of the Appalachian Regional Commission's Entrepreneurial Initiative*. Carrboro, NC: Regional Technology Strategies, March 2001.

64. Erik Pages and Shari Garmise, *Building Entrepreneurial Networks*. Washington, DC: National Commission on Entrepreneurship, December 2001.

65. Cornelia B. Flora & Jan L. Flora, "Entrepreneurial Social Infrastructure: A Necessary Ingredient." *The Annals of the Academy of Social and Political Sciences,* 529 (1993): 48-58.

66. See Cornelia B. Flora, Background Paper No. 1.

Appendix A: Participants

Alen Amirkhanian,
Initiative for a Competitive Inner City

Sergio Arzeni,
Organization for Economic Cooperation and Development

Chris Benner,
Pennsylvania State University

Greg Bischak,
Appalachian Regional Commission

Sarah Butzen,
Regional Technology Strategies

Jim Clinton,
Southern Growth Policies Board

Joe Cortright,
Impresa, Inc.

Frank DeGiovanni,
The Ford Foundation

Wayne Fawbush,
Vermont Sustainable Jobs Fund

Cornelia Flora,
North Central Regional Center for Rural Development

John Foster-Bey,
The Urban Institute

Miguel Garcia,
The Ford Foundation

Edward W. Hill,
Cleveland State University

William Kaufmann,
Connecticut Economic Resource Center, Inc.

Mikel Landabaso,
European Commission—DG Regional Policy

Jackie Loh,
The Ford Foundation

Neil Mayer,
Center for Community Change

Jonathan Morgan,
Regional Technology Strategies

Eric Parker,
Wisconsin Regional Training Partnership

Phil Psilos,
National Governors' Association

Sue Soltis,
Regional Technology Strategies

Stuart Rosenfeld,
Regional Technology Strategies

Trent Williams,
Regional Technology Strategies

Planning committee

Amy Glasmeier,
Pennsylvania State University

Phil Cooke,
University of Wales

Meenu Tewari,
University of North Carolina

Anne Habiby,
Initiative for a Competitive Inner City

Appendix B: Background Papers and Resources

No. 1 Clusters And Low- And Moderate-Income Rural Populations

Cornelia Butler Flora,
Iowa State University

No. 2 Sustainability of Clusters: Ten Dos and Don'ts

E.M. Bergman,
Vienna University of Economics and Business

No. 3 Clusters and Local Enterprises and Entrepreneurs: A Rural Perspective

Ifor Ffowcs-Williams,
Cluster Navigators Ltd, New Zealand

No. 4 Sectoral Opportunities for Low-Income Community Residents

Issa Kohler-Hausmann and Eric Parker,
Center on Wisconsin Strategy

No. 5 Clusters and Less Prosperous Places: Policy Options in Planning and Implementation

Mikel Landabaso,
European Union

No. 6 Clusters and Disadvantaged Populations

Neil S. Mayer,
Neil Mayer & Associates

Presentation by Mark Sorrells, Vice President of the Golden LEAF about clusters in western North Carolina's economy, past, present and future.

REGIONAL
TECHNOLOGY
STRATEGIES, INC.

Since 1991, RTS has been developing, analyzing, and implementing strategies to create high wage jobs and wealth in communities. RTS, a 501(c)(3) nonprofit located in Carrboro, North Carolina, builds regional competitive advantage through economic and workforce development policy and practice. RTS pays special attention to disadvantaged places and populations.

RTS • 205 Lloyd Street, Suite 210 • Carrboro, NC 27510 USA • +1 919 933 6699 • www.rtsinc.org